



THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্তৃত্বৰ দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY

নং 596 দিশপুৰ, বৃহস্পতিবাৰ, 18 আগষ্ট, 2022, 27 শাওণ, 1944 (শক)

No. 596 Dispur, Thursday, 18th August, 2022, 27th Sravana, 1944 (S. E.)

GOVERNMENT OF ASSAM

ORDERS BY THE GOVERNOR

DEPARTMENT OF HOUSING AND URBAN AFFAIRS

NOTIFICATION

The 2nd May, 2022

No. UDD(T)181/2022/8.— In exercise of the powers conferred by the Section 9 and Sub-section(1) of Section 10 of the Assam Town & Country Planning Act, 1959 (as amended) and (Assam Act II of 1960) read with Sub-rule (1) of Rules 3 of the Assam Town & Country Planning (Publication of Master Plan and Zoning Regulations) Rules 1962, the Governor of Assam is pleased to publish the following notice regarding the publication of the Draft Revised Master Plan for Tinsukia.

Notice for publication of the Draft Revised Master Plan for Tinsukia :

1. It is notified that the Draft Revised Master Plan for Tinsukia prepared by the Directorate of Town and Country Planning, Assam under Section 9 of the Assam Town & Country Planning Act, 1959 (as amended) as described in the schedule below is here by published.
2. Any person or persons affected by the Draft Revised Master Plan may submit their objections or opinions in writing to the Director of Town & Country Planning within two months from the date of publication.
3. The Draft Revised Master Plan with all relevant papers and maps may be inspected free of cost during the office hours at the office of Director, Town & Country Planning, Dispur, Guwahati-6, Deputy Director, Town & Country Planning, Dist Office –Dibrugarh, Office of the Chairman, Tinsukia Municipal Board & Tinsukia Development Authority, Tinsukia and Doomdooma Circle Office. Copy of the Draft Revised Master Plan is available in the office of the Deputy Director, Town & Country Planning, Dist Office – Dibrugarh for sale on payment.

SCHEDULE:

District	: Tinsukia
Revenue Circle	: Tinsukia & Doomdooma
Block	: Guijan, Itakhuli, Hapjan
Mauza	: Tinsukia, Rangagora, Bogdung, Gharbandi, Tipling, Hapjan
Master Plan	: Tinsukia
Existing Master Plan Area	: 52.6 Sq.km.
Revised Master Plan Area	: 130.65 Sq.km
Urban Area (MB+OG+CT)	: 10.54Sq.km+10.17Sq.km =20.71 Sq.km. Village
Area	: 109.94 Sq.km.

**REVENUE AREAS INCLUDED IN
DRAFT REVISED MASTER PLAN FOR TINSUKIA**

Sl. No	Town/OG/CT/Village/TE	Revenue Circle	Block
1	Tinsukia Municipal Board Area	Tinsukia	-
2	Lohari Kachari Gaon	Tinsukia	Guijan
3	Hengaluguri Gaon	Tinsukia	Guijan
4	Bajaltali Gaon	Tinsukia	Guijan
5	Hijuguri Gaon	Tinsukia	Guijan
6	Bordoloi Nagar	Tinsukia	Itakhuli
7	Bahbari Gaon	Tinsukia	Itakhuli
8	Kachujan Gaon	Tinsukia	Guijan
9	Bhimpara Gaon	Tinsukia	Itakhuli
10	Dehingia Gaon	Tinsukia	Guijan
11	Dhekiajuri Gaon	Tinsukia	Guijan
12	Dimaruguri Gaon	Tinsukia	Guijan
13	Dhekiajuri Bangali Gaon	Tinsukia	Guijan
14	Hukanpukhuri Gaon	Tinsukia	Itakhuli
15	Itakhuli T.E. Gr. No.250NLR(TE)	Tinsukia	Itakhuli
16	Joriguri Gaon	Tinsukia	Guijan
17	Kokratoli Gaon	Tinsukia	Guijan
18	Kachujan TE Gr. No.236/234,TE 163/160&257 NLR	Tinsukia	Guijan
19	Kaptanchuk Gaon	Tinsukia	Guijan
20	Kadamoni Gaon	Tinsukia	Guijan
21	Lezaihula gaon	Tinsukia	Guijan
22	Norshing Gaon	Tinsukia	Itakhuli
23	No.1 Patia Pathar	Tinsukia	Itakhuli
24	Okonimuria Bangali Gaon	Tinsukia	Guijan

25	Okonimuria Kachari Gaon	Tinsukia	Guijan
26	Porbatia Gaon	Tinsukia	Guijan
27	Tingrai habi Gaon	Tinsukia	Itakhuli
28	Ahukhat Gaon	Tinsukia	Guijan
29	Bherjan Gaon	Tinsukia	Guijan
30	Borbheta Bangali Gaon	Tinsukia	Itakhuli
31	Chandmari Nepali gaon	Tinsukia	Guijan
32	Changmai Gaon	Tinsukia	Guijan
33	Choto Tingrai TE54 FS(TE)	Tinsukia	Itakhuli
34	Dahutia Gaon	Tinsukia	Itakhuli
35	Gaharipam Gaon	Tinsukia	Guijan
36	Gelapukhuri TE 258NLR Gr.(TE)	Tinsukia	Guijan
37	Gelapukhuri TE 261NLR Gr.(TE)	Tinsukia	Guijan
38	Gelapukhuri TE 285NLR Gr.(TE)	Tinsukia	Guijan
39	Gelapukhuri TE 266NLR Gr.(TE)	Tinsukia	Guijan
40	Hilikhaguri Gaon	Tinsukia	Itakhuli
41	Hukanpukhuri TE Patta land(TE)	Tinsukia	Guijan
42	Hukanpukhuri TE 37/73 NLR Grant (TE)	Tinsukia	Itakhuli
43	Itakhuli TE 107 NLR	Tinsukia	Itakhuli
44	Itakhuli TE 129/125 NLR	Tinsukia	Itakhuli
45	Jhinga Gaon	Tinsukia	Itakhuli
46	Jugipathar Gaon	Tinsukia	Guijan
47	Gelapukhuri Gaon	Tinsukia	Guijan
48	Keheng TE 23/145 OR	Tinsukia	Itakhuli
49	Kukurekhuwa Gaon	Tinsukia	Guijan
50	Limbuguri TE 251/149NLR Gr.(TE)	Tinsukia	Guijan
51	Luhari Bongali Gaon	Tinsukia	Itakhuli
52	Luhari Nepali Gaon	Tinsukia	Itakhuli
53	Morankari Gaon	Tinsukia	Itakhuli
54	Na-Gaon	Tinsukia	Guijan
55	Nakharai Bongali Gaon	Tinsukia	Guijan
56	Nakharai gaon	Tinsukia	Guijan
57	No.1 Balupara Gaon	Tinsukia	Guijan
58	No.2 Balupara Gaon	Tinsukia	Guijan
59	No. 2 Patia Pathar Gaon	Tinsukia	Itakhuli
60	Nunpuria Bongali Gaon	Tinsukia	Guijan
61	Nunpuria Kaibotra Gaon	Tinsukia	Guijan
62	Pakhorijan Gaon	Tinsukia	Itakhuli
63	Hatigarh Gaon	Doom Dooma	Hapjan
64	Chikajan Gaon	Tinsukia	Guijan

65	Chandmari Gaon	Tinsukia	Guijan
66	Nakhari Dhekeri gaon	Tinsukia	Guijan
67	Podumoni Gaon	Tinsukia	Guijan
68	Hebeda Bongali Gaon	Tinsukia	Itakhuli
69	Tarajan Gaon	Doom Dooma	Hapjan
70	Lesengka Bangali Gaon	Doom Dooma	Hapjan
71	Panitola Gaon	Tinsukia	Guijan
72	Panitola T.E.-68	Tinsukia	Guijan
73	Nokhroy T.E.162/159 Nlr-149/146 Nlr	Tinsukia	Guijan
74	Hebeda T.E. 176/179 Nlr	Tinsukia	Itakhuli

Source: Census of India, 2011

DESCRIPTION OF BOUNDARIES

North : Dholakhat Grant, Dhakowal Gaon, Limbuguri Grant. 227/225 NLR, Limbuguri Grant No.151/148 NLR, Polonihula gaon, Padumoni Reserve Forest.

South: Katenghabi, Kharikatia gaon, Kharitolia gaon, Moukhuli Gaon, Borbtheta Kuhiarbari Gaon, 128/125,165/162 No. NLR Grant

East : Disowjan Gaon, Betjan Gaon, Betjan Grant No. 255 NLR, Betjan Grant No. 297 NLR

West : Panitola Grant, Panimudi habi Gaon, Nokari grant.

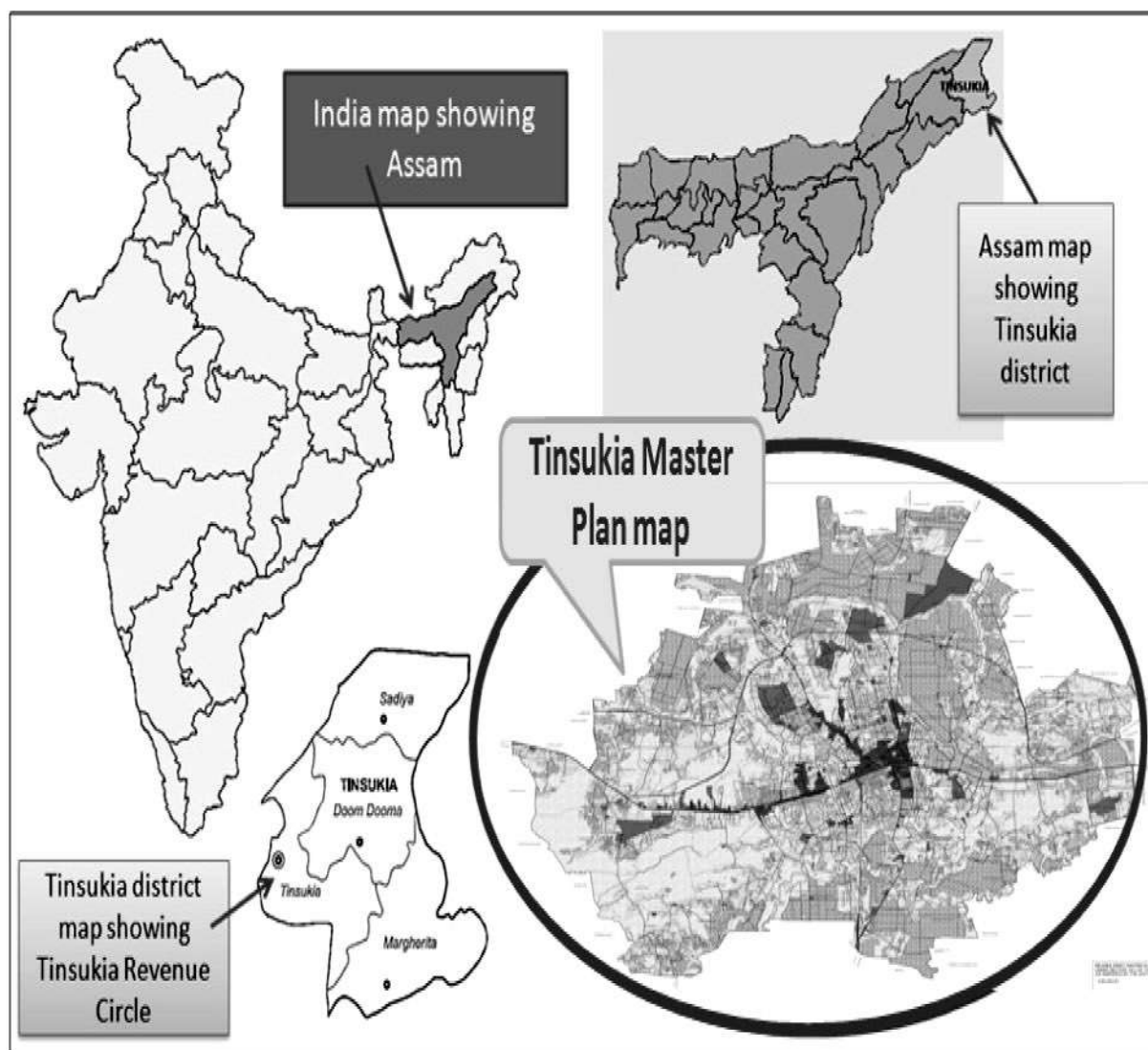
KAVITHA PADMANABHAN,
Commissioner & Secretary to the Government of Assam,
Department of Housing and Urban Affairs,
Dispur, Guwahati-6.

CHAPTER - 1

1. INTRODUCTION TO MASTER PLAN AREA

1.1 Location

Tinsukia is an industrial as well as 2nd largest commercial town after Guwahati in Assam. It is situated at 490 km. towards north-east from state capital Dispur by road and 48 km. from nearest important town Dibrugarh. The town and its surrounding villages itself have a natural scenic beauty with the tea gardens and the place of habitants of the various ethnic tribes and linguistic people with their own cultural heritage. The geographical location of Tinsukia town is 27.5° North latitude and 95.37° East longitude and has an average elevation of 116 meters. The NH-37 (old) and NH-15 (new) passes through Tinsukia.



1.2 Regional Setting

Tinsukia master plan region falls in the north-eastern part of India in the upper Assam valleys. The whole master plan area is a flat level plain. The general physical feature of the master plan area is both varied and picturesque in nature. The soil is composed of loose sandy texture with occasional sands and gravels. However, clayey soil up to a certain depth in many parts of the master plan area. The phosphoric content is found in the soil which is good for tea cultivation. Acidic alluvial soils are suitable for tea cultivation. Like the rest of Assam, Tinsukia master plan region is also a seismic area and prone to earthquake. The great earthquake of 1897 was felt all over the region. It damaged many houses and buildings of the people as well as of the Govt offices. Again the earthquake of August 15, 1950 has also damaged houses buildings and roads. The after effect of the earthquake brought a vast change to the topography of the region and the river Brahmaputra became the agent of destruction. The surrounding areas of Tinsukia are mainly covered by Dibru-Saikhowa National Park and tea gardens.



1.3 Brief history of the town & surrounding

In ancient days, there was no place in the name of Tinsukia, it was a part of Somarpith division of upper Assam or old Kamrupa Kingdom as mentioned in Kalikapuran and Joginitrant. The Somarpith division of Kamrupa was the abode of Chutia, Barahi, Ahom, Kachari, Muttock, Moran etc. and this division was ruled by different kings of different races probably from 12th century. In 13th century the Tai prince Sukapha after crossing Patkai mountain had first met Moran Barahi in this division. The last ruler of different races of king of this area of Somar division was from Muttock / Chutia.

In the later part of 18th century some of the leaders of different localities had established their kingdoms getting opportunity of weak conditions of Ahom king. Out of these leaders Mezera, son of Marutananda of upper Assam was worth mentioning. He had established Muttock kingdom at

Somarpith by christening Bengmora as the name of his kingdom. Later on Mezera changed his name to Swargadeu Sarbananda Singha and declared himself king of Muttock kingdom. The king established his capital at Rungagora in the year 1788.

There are different opinions about the name of Bengmora. Some are of opinion that it is a Tai word which means the original place of Moran. The king Sarbananda Singha had dug Bengmora pond at Bengmora to keep the symbol of Hatichungi Moran. The historians say that the king had dug the pond to save from drought that prevailed in his kingdom. No water had come out in the pond. But, on the other hand, a large number of frogs died falling in the pond. Hence the pond was termed as Beng (frog) Mara (die) Pukhuri (Pond) and from the name of the pond, the name of kingdom was ultimately changed to Bengmora. In 1791, the capital was transferred from Rungagora to Bengmora.



Old historical map showing Bengmora kingdom

Several ponds were dug in the days of Muttock king viz. Chaulkhuwa Pukhuri, Na-pukhuri, Bor Pukhuri, Kadomoni Pukhuri, Da dharua pukhuri, Devi pukhuri, Selukia pukhuri, Rupahi pukhuri, Bengmora pukhuri, Tinkunia pukhuri, Borgudha Pukhuri, Saru Gudha Pukhuri, Kunti Pukhuri, Kebahi Pukhuri, Neogoni Pukhuri, Lemtem Pukhuri, Kuwaii/Kawoi Pukhuri, Janadin Pukhuri, Chechuwani Pukhuri etc. Actually the name Tinsukia comes from the pond Tinkunia pukhuri situated in the middle of the town. Apart from these ponds there are many ancient roads constructed in different parts of the Muttock territory, such as Godha Nath Baruah Road (G.N.B) Rangagora Road, Raja Ali, Ragor Road, Hatiali etc. Description of a few ponds of the present master plan area are given below.

1. Tinkunia Pukhuri : Tinkunia Pukhuri is situated by the side of NH-15 about the entrance of main Tinsukia town, under TMB wards No. 12 bearing Tinsukia town sheet No. 10 and by Dag No. 4165(new).



2. Na-pukhuri : This pond is situated at ward No. 4. After implementation of project Na-pukhuri this historical ponds is well preserved and beautified. Na-pukhuri consists of one big pond with total area of 10B-3K-4L bearing Dag No. 2083, surrounded by 8 (eight) other small ponds.



3. Bengmora Pukhuri : Bengmora pukhuri is situated under Tinsukia town ward No. 10 and Dag No. 402. Present location of this pond is in front of Tinsukia crematorium ground. Both end of the Bangmora pukhuri is bounded by the eastern side Assamese Puja Mandir and to the western side Nepali Puja mandir.

4. Devi Pukhuri : Devi Pukhuri is situated near Panch ali at ward No. 9 adjacent to the Tinsukia Development Authority Office.

5. Chowldhuwa Pukhuri : The pond is situated at ward No. 11, back side of Senairam H.S. School. The total area of the pond and embankment under Dag No. 4804 is more than 1 Bigha.

6. Borpukhuri : This pond is located under Rangagora Mouza, Bozaltoli G.P. with Dag. No. 52 holds 4 B – 1 K-19 L of land and the exact position of this pond is to the eastern side of Sarbananda Singha Stadium.

After the death of the king Sarbananda Singha, the oldest son Matibor become the king in 1802 and he ruled the kingdom up to 1825. Before his death he shifted the responsibility of the kingdom to his second son Bhagirath. In 1842, the Muttock kingdom was totally included in the British Emperors dominion by an act. After the death of Bhagirath, Bishaswar the third son of Bhagirath was the last and traditional person of Muttock family who had received royal pension from the British Government.

Tinsukia was originally a part of Lakhimpur district and thereafter, it was a part of Dibrugarh district. Tinsukia sub-division of Dibrugarh district was created on 26th January, 1973. Tinsukia was finally formed a separate district in 1989. For the administrative purpose, the entire district is divided in to three Sub-divisions, viz- Tinsukia, Margherita and Sadiya. There are total 4 (four) revenue circles – Tinsukia, Doomdooma, Margherita and Sadiya, 7 (seven) Community Development Blocks – Sadiya, Saikhowa, Hapjan, Kakapathar, Guijan, Itakhuli and Margherita and 1168 villages. There are 13 (thirteen) towns which includes 5 (five) statutory towns and 8 (eight) Census towns. Out of these in Tinsukia master plan area 1 (one) statutory town viz – Tinsukia town, 2 (two) census town viz Bahbari gaon and Kachujan Gaon, 5 (five) outgrowth area and 66 villages and tea estates are included. The present municipality of Tinsukia was initially a union committee in 1919 and it was converted a town committee in 1924. It was upgraded to a municipal board in 1937. According to the 1961 census, Tinsukia town had a population of 28468 persons of which 18333 were male and 10135 were females inhabiting an area of about 10.36 Sq. Km. The 1971 census showed that the population of the town had increased to 54911 persons of which 33313 were males and 21598 were females. The density of population was 5300 persons per Sq. Km.

In 1884 a railway station was constructed near the Tinkunia pukhuri, when the Dibru-Sadiya rail line was laid, which was named as Tinsukia. Even since then the town popularly known as Tinsukia. The Dibru-Saikhuwa national park situated adjacent to the town is a national park of India and is considered an important bio diversity hot spot in India. Considered as the commercial capital of Assam, Tinsukia is known for its best quality tea production, wood related products.



Tinsukia Junction

1.4 Climate

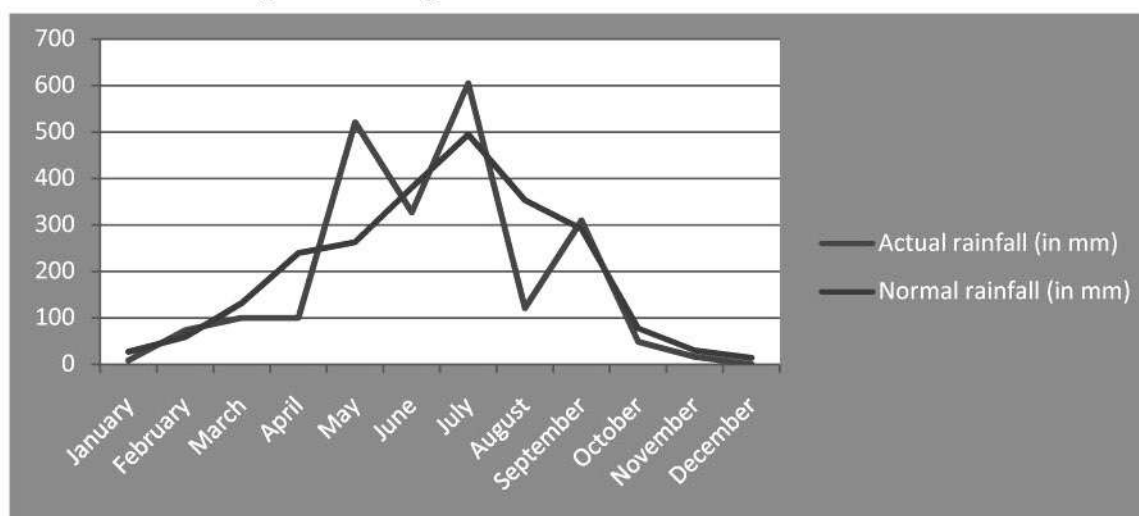
The climate of Tinsukia is characterized by the absence of a dry hot summer season, the highest temperature being experienced during the monsoon season along with abundant rains and highly humid atmosphere throughout the year. Winter starts from December and ends in February which is followed by a season of thunder storms from March to May. From June to the beginning of October, the season of south-west monsoon and October and November are marked as post monsoon season. The annual rainfall varies marginally from one to other. The cold season starts towards the end of November when both day and night temperatures begin to decline and December and January is the coldest month of the year. With the mean daily maximum temperature at about 24° C and the mean daily minimum at 9° C to 11° C. Temperature begins to rise from the beginning of March. The rise in temperature continues up to September. The highest mean daily temperature experienced in July and August when the mean daily maximum temperature goes up to maximum of 34° C and the mean daily minimum temperature varies between 20° C to 25° C. With the termination of the monsoon season the weather become gradually pleasant and cool. The air remains highly humid throughout the year except during the period of February to March when the relative humidity is comparatively less particularly in the afternoon. Winds are light throughout the year except the short spells of strong winds during thunder storms in the period from March to May.

TABLE No-1
Average monthly rainfall data in Tinsukia in 2019

Month	Actual rainfall (in mm)	Normal rainfall (in mm)
January	8.8	26.6
February	73.5	58.4
March	100.3	131.2
April	100.5	239.3
May	520.4	262.6
June	327.2	379.3
July	604.8	493.9
August	120.6	352.7
September	309.8	291
October	48.8	76.9
November	16.2	29.3
December	0.2	13.7
Average Annual rainfall	2231.1	2354.9

Source: Statistical Handbook Assam, 2020

Figure No-1
Average monthly rainfall data in Tinsukia in 2019



1.5 Topography

Topography is the study of the shape and features of the surface of the earth. The topography of an area could refer to the surface shapes and features themselves, or a description in maps. In modern usage topography involves generation of elevation data in digital form. It is often considered to include the graphic representation of the landform on a map by a technique, including contour lines, hypsometric tints and relief shading.

Below is the elevation map of Tinsukia, which display range of elevation with different colours. The map also provides idea of topography and contour of Tinsukia.



Topographical map of Tinsukia

1.6 Soil Condition

Physiographically the area is characterized by Brahmaputra plains in the southern part with gentle slope towards north-west. The soil in the area may be grouped in to three broad categories depending upon the origin and occurrence. These are given below-

- a. Newer alluvial soil – Flood plain areas of river Brahmaputra and the tributaries in the northern part are characterized by light gray clay with sand and silt.
- b. Older alluvial soil - It occurs mainly in the central part with limonite yellow to reddish yellow clay.
- c. Soil cover in forest areas – It is deep reddish in colour and occurs over the older geological formation in the south-western most part of Tinsukia.

Tertiary group of sedimentary rocks are confined to the southernmost part of Tinsukia where ground water occurs in the shallow weathered zone and this may be developed through large diameter open wells. Alluvial plain covers major part of the area. Ground water occurs in regionally extensive aquifers down to explored depth of 250m with a very good yield prospect. The aquifers are consisting of sand of various grades and are suitable for both shallow and deep tube wells.

Tinsukia region is covered by alluvial deposits of recent and sub-recent origin. In many places of the area, there are terrace deposits. These are known as the older or high level alluvium consists of boulders pebbles and cobbles or quartzite, sandstone, shale, slate. This region is also very rich in mineral deposits and huge deposit of coal, petroleum and natural gas which play an important role in the economy and industrial development of the state since long back. Besides, clays for brick making and pottery and gravels for road melting and other useful purposes are abundantly found in Tinsukia.

1.7 Settlement Pattern

Tinsukia experienced the settlement of traders, construction workers, railway employees, commercial establishment employees, industrial workers, other service oriented workers and Govt. employees since the early days. This slow and steady growth of settlers together with the decision of many retired employees of railway and Govt. department to settle in the town increases the population of the town. In the town area settlement pattern mainly exhibits by the hindi speaking population of northern belt of India for commercial purposes as well all know that Tinsukia is the 2nd largest commercial town of Assam after Guwahati. Bengali speaking peoples settlement in the town area is also high due to engagement of these people in the railway department from early days. Plantation labour worker and indigenous people settlement is mainly found in the rural areas.

1.8 Rural – Urban Scenario

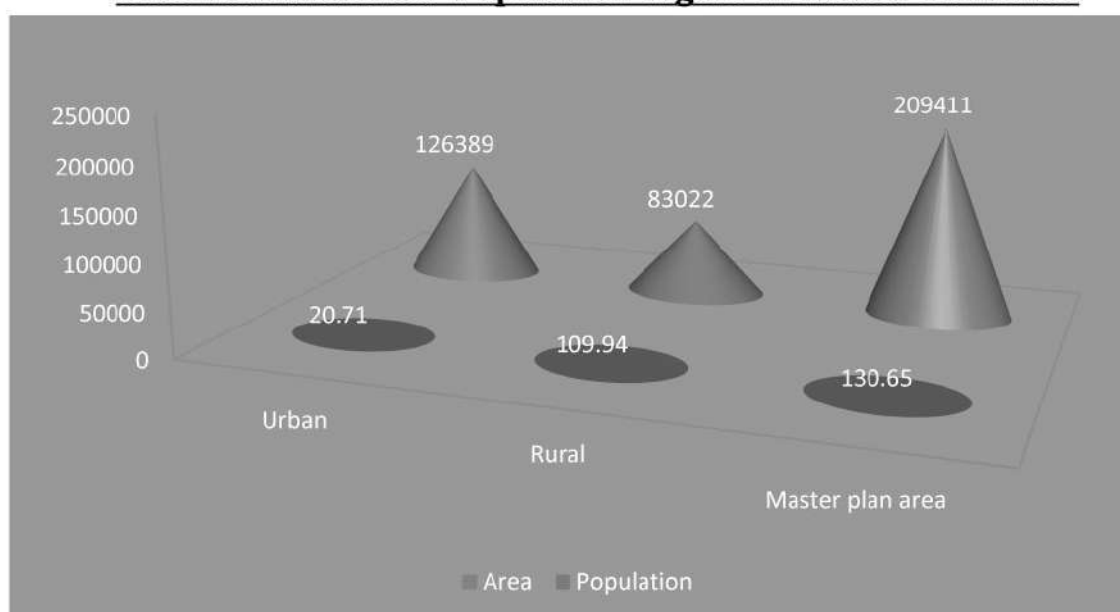
Tinsukia master plan covers an area of 130.65 sq. km. Out of this, 20.71 sq. km. is urban area and 109.94 sq.km is rural area respectively. As per 2011 census urban area (MB+OG+CT) population is 126389 persons and rural area population is 83022 persons. So, in Tinsukia master plan area (TMPA), urban population consists of 60.35% and rural area population consists of 39.65 %. Since originally Tinsukia developed as a commercial and an industrial town, that's why the percentage of urban population is generally high in comparison to rural population within master plan area.

TABLE NO :- 2
Urban & Rural Area Population Figure in Master Plan Area

Name of the Master plan area	Category of area	Area in sq.km	Population in 2011
Tinsukia master plan	Urban	20.71	126389
	Rural	109.94	83022
Total		130.65	209411

Source: Census of India, 2011

FIGURE NO-2
Urban & Rural Area Population Figure in Master Plan Area



1.9 Physical growth and expansion of town

Physical growth and expansion of Tinsukia town has been mainly taken place due to the commercial establishment, railway establishment and industrial

activities since long back. Railway service is contributing a lot for the expansion of the town in manifolds. The growth of the town also takes place due to the existence of tea industry in the region and ancillary activities related to tea and timber industry. In the recent years automobile industry is also expanding in the adjacent areas of the town thereby expanding the town beyond the municipal boundaries.

For planning purpose revised Tinsukia master plan area is divided into the following zones:-

- A. The urban zone comprises the following areas:
1. 15 (fifteen) wards under Tinsukia Municipal Board.
 2. 2 census towns
 3. 5 outgrowth villages.
- B. The rural zone comprises the following villages and tea gardens.
1. 51 Villages.
 2. 15 Tea Gardens.

TABLE NO-3
Detailed area of Revised Tinsukia Master Plan

Sl. No	Name of Area	Area in Sq. km.	Mauza
1	Tinsukia Municipal Board Area	10.54	Tinsukia & Rangagora
2	Bahbari Gaon	2.23	Bogdung
3	Kachujan Gaon	0.92	Rangagora
4	Lohari Kachari Gaon	2.72	Tinsukia
5	Hengaluguri Gaon	0.81	Rangagora
6	Bajaltali Gaon	2.80	Rangagora
7	Hijuguri Gaon	0.52	Tinsukia
8	Bordoloi Nagar	0.66	Rangagora
9	Bhimpara Gaon	1.14	Tinsukia
10	Dehingia Gaon	1.72	Bogdung
11	Dhekiajuri Gaon	1.41	Gharbandi
12	Dimaruguri Gaon	2.04	Gharbandi
13	Dhekiajuri Bangali Gaon	0.91	Rangagora
14	Hukanpukhuri Gaon	1.94	Rangagora
15	Itakhuli T.E. Gr. No.250NLR(TE)	0.31	Tinsukia
16	Joriguri Gaon	1.16	Rangagora
17	Kokratoli Gaon	1.24	Rangagora
18	Kachujan TE Gr. No.236/234,TE 163/160 & 257 NLR	3.44	Rangagora
19	Kaptanchuk Gaon	1.67	Gharbandi
20	Kadamoni Gaon	0.31	Gharbandi
21	Lezaihula gaon	0.80	Rangagora
22	Norshing Gaon	0.56	Tinsukia
23	No.1 Patia Pathar	1.41	Tinsukia
24	Okonimuria Bangali Gaon	1.56	Bogdung
25	Okonimuria Kachari Gaon	2.72	Bogdung
26	Porbatia Gaon	0.32	Tinsukia
27	Tingrai habi Gaon	0.99	Tinsukia
28	Ahukhat Gaon	1.41	Rangagora

29	Bherjan Gaon	2.43	Rangagora
30	Borbheta Bangali Gaon	1.53	Tipling
31	Chandmari Nepali gaon	1.26	Rangagora
32	Changmai Gaon	1.13	Gharbandi
33	Choto Tingrai TE54 FS(TE)	2.53	Tipling
34	Dahutia Gaon	1.05	Gharbandi
35	Gaharipam Gaon	3.73	Gharbandi
36	Gelapukhuri TE 258NLR Gr.(TE)	2.19	Rangagora
37	Gelapukhuri TE 261NLR Gr.(TE)	1.75	Rangagora
38	Gelapukhuri TE 285NLR Gr.(TE)	1.27	Rangagora
39	Gelapukhuri TE 266NLR Gr.(TE)	0.96	Rangagora
40	Hilikhaguri Gaon	1.94	Gharbandi
41	Hukanpukhuri TE Patta land(TE)	1.31	Rangagora
42	Hukanpukhuri TE 37/73 NLR Grant (TE)	5.05	Tinsukia
43	Itakhuli TE 107 NLR	0.52	Tipling
44	Itakhuli TE 129/125 NLR	2.48	Tipling
45	Jhinga Gaon	0.38	Tipling
46	Jugipathar Gaon	0.78	Gharbandi
47	Gelapukhuri Gaon	4.20	Rangagora
48	Keheng TE 23/145 OR	2.09	Tipling
49	Kukurekhuwa Gaon	3.08	Gharbandi
50	Limbuguri TE 251/149NLR Gr.(TE)	0.50	Rangagora
51	Luhari Bongali Gaon	2.40	Rangagora
52	Luhari Nepali Gaon	1.92	Tinsukia
53	Morankari Gaon	1.74	Gharbandi
54	Na-Gaon	2.77	Gharbandi
55	Nakharai Bongali Gaon	0.83	Rangagora
56	Nakharai gaon	2.94	Rangagora
57	No.1 Balupara Gaon	2.39	Rangagora
58	No.2 Balupara Gaon	0.22	Rangagora
59	No. 2 Patia Pathar Gaon	0.29	Tinsukia
60	Nunpuria Bongali Gaon	1.56	Rangagora
61	Nunpuria Kaibotra Gaon	2.32	Rangagora
62	Pakhorijan Gaon	2.73	Tinsukia
63	Hatigarh Gaon	1.75	Hapjan
64	Chikajan Gaon	0.96	Rangagora
65	Chandmari Gaon	1.29	Rangagora
66	Nakhari Dhekeri gaon	0.34	Rangagora
67	Podumoni Gaon	1.04	Rangagora
68	Hebeda Bongali Gaon	0.37	Tinsukia
69	Tarajan Gaon	1.49	Hapjan
70	Lesengka Bangali Gaon	2.31	Hapjan
71	Nokhroy T.E. 162/159 Nlr -149/146 Nlr	2.25	Rangagora
72	Panitola Gaon	3.07	Gharbandi
73	Panitola T.E. No-68 Fs grant	1.51	Bogdung
74	Hebeda T.E. 176/179 Nlr	1.74	Tinsukia
	TOTAL AREA (Sq. Km)	130.65	

Source : Area as per census of India 2011

1.10 Need of the Master Plan

The concept of planning has evolved gradually through the changing demand of man and environment but has assumed greater significance and wider connotation from the inception of the present century. The rapid pace of industrial expansion and urbanization has hastened the growth of urban centres. The forces operating behind urban expansion in recent years is becoming more and more difficult to direct or to control. To check the unplanned and haphazard growth of the towns, the principles of planning has been accepted as urgent imperative measures.

A town is composed of land, building, people, utilities, services and transportation. It is a large configuration of more or less permanent settlers engaged in diverse economic activities. As the town grows, it attracts larger population; it enlarges the scope of their activities, while the complexity of living distorts the well organized concept of the urban space organization.

Master plan is a statutory instrument for the provision of long-range vision for the built environment of a community. It guides the appropriate use of lands within a town and its adjacent areas in order to protect the public health and safety and to promote general welfare. Among other issues, the master plan can identify suitable locations for commercial, housing and mixed-use development; locations where the city/town should increase density, use redevelopment or intervene otherwise; opportunities to extend or improve open space, recreational areas and civic facilities; strategies for increasing economic development; environmental, historic strategies for solving congestion, improving transit services and also enhance the aesthetic beauty of the town. As a result, the master plan has a direct relationship to its citizens, whether we live, work or own a business.

The evils of unplanned growth of our towns have caused enormous problems such as shortage of living accommodation, traffic congestion, lack of sanitation and other community facilities and amenities. The growth of population and the potentiality of Tinsukia to be an industrially and commercially vibrant town in the near future had led the state Government to realize the importance of proper planned growth of the town and the preparation of the master plan for this purpose.

In order to translate the suggested developments for Tinsukia into action, it would be necessary to follow this master plan designed to regulate the future growth and to affect a uniform community. In preparing the master plan for Tinsukia various surveys such as land-use, socio-economic etc. were carried out to understand the existing scenario of the town and to suggest the line of actions to be adapted.

It is highly desirable at this point that the citizens of Tinsukia should clearly understand the need for the master plan because a master plan is the city/town's long range plan and is important as it affects things we do every day and how we will do then in the future. Master plan guide city/towns decisions about important issues like what economic development strategy the city town should take; where certain types of business should the town try to attract; how much parking should be provided in neighbourhood; what improvements should be made to parks and recreations centres; how to protect our natural resources; why certain areas are designed as historic places. So, when we wonder why a building is allowed to be located somewhere, why certain streets are one-way streets, why a park has been built in our neighbourhood; a good place to start looking is the master plan. As such, the most desired results could be positive civic interest and greater confidence which will create a conducive environment and our descendents will profit by our forethought or suffer from our negligence. What better work can we achieve to make their path easier, their homes more intimate, their public buildings more attractive and accommodating

The preparation of master plan is a continuous process and needs revisions / modifications from time to time to incorporate the unforeseen development, technical innovations etc. The first master plan of Tinsukia was approved in the year 1962 and accordingly Tinsukia Development Authority was created by the Govt. for the execution of master plan in 1963. After the expiry of the validity period of master plan it was revised and approved by the Govt. in the year 1993 and modified in the year 2008. The plan period of this master plan was up to 2011. As such, it is necessary to revise the Tinsukia master plan by adopting new GIS based technology to provide better guidelines for the balanced development of the existing area as well as adjacent incorporated areas.

CHAPTER -2**2. DEMOGRAPHY****2.1 Total Population**

Demography is the study of human population such as size, growth, density, distribution and vital statistics. It helps to understand population dynamics by investigating three main demographic processes in Tinsukia. It is essential that a good understanding of a population dynamics provide the basic for decision making, policy development and planning social and economic development processes and outcomes are depends upon the detailed study of population characterized of any planning area.

According to census of India 2011, the total population of Tinsukia master plan area is 209411 persons, out of which 99448 persons live within the Tinsukia municipal board, 26941 persons live within census town & outgrowth areas and 83022 persons live in adjacent rural areas of the town. The following table shows the population distribution within Tinsukia master pan area.

TABLE NO. 4
Existing population of Tinsukia Master Plan area, 2011

Sl.No.	Master Plan Area	Population (2011)	Percentage (%)
1	Tinsukia municipal board	99448	47.49 %
2	2 census towns	10067	4.81 %
3	5 outgrowths	16874	8.06 %
4	66 villages & tea gardens	83022	39.64 %
Total Population		209411	100 %

(Source : Census of India 2011)

Figure No. 3
Population Distribution of Master Plan Area, 2011

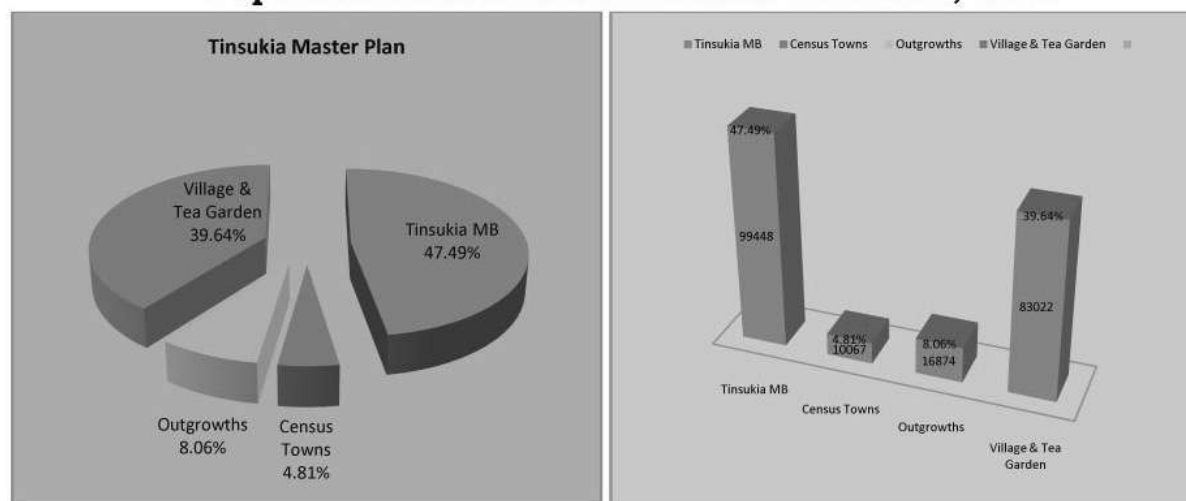


TABLE NO. 5
Detail population distribution of Tinsukia Master Plan area in 2011.

Name	Population		
	Male	Female	Total
Ward No. 1	5240	4856	10096
Ward No. 2	2307	2084	4391
Ward No. 3	7387	6327	13714
Ward No. 4	2996	2414	5410
Ward No. 5	2532	2187	4719
Ward No. 6	2653	2058	4711
Ward No. 7	3463	3218	6681
Ward No. 8	1847	1791	3638
Ward No. 9	4785	4236	9021
Ward No. 10	3480	2610	6090
Ward No. 11	3087	1856	4943
Ward No. 12	473	379	852
Ward No. 13	3432	3115	6547
Ward No. 14	2179	2173	4352
Ward No. 15	7628	6655	14283
Tinsukia Municipal Board area population	53489	45959	99448
Lohari Kachari gaon (OG)	1694	1610	3304
Hengaluguri gaon (OG)	676	649	1325
Bajaltali gaon (OG)	2598	2380	4978
Hijuguri gaon (OG)	2748	2377	5125
Bordoloi Nagar (OG)	1098	1044	2142
Bahbari gaon (CT)	3491	3330	6821
Kachujan gaon (CT)	1610	1636	3246
OG & CT area population	13915	13026	26941
(A) Tinsukia Urban area population	67404	58985	126389
Bhimpara Gaon	361	327	688
Dehingia Gaon	351	295	646
Dhekiajuri Gaon	184	189	373
Dimaruguri Gaon	1038	804	1842
Dhekiajuri Bangali Gaon	1787	1600	3387
Hukanpukhuri Gaon	2092	1795	3887
Itakhuli T.E. Gr. No.250NLR(TE)	199	175	374
Joriguri Gaon	851	498	1349
Kokratoli Gaon	1023	1005	2028

Kachujan TE Gr. No.236/234,TE 163/160&257 NLR	1485	1483	2968
Kaptanchuk Gaon	1091	999	2090
Kadamoni Gaon	1070	1068	2138
Lezaihula gaon	379	369	748
Norshing Gaon	400	368	768
No.1 Patia Pathar	1416	1388	2804
Okonimuria Bangali Gaon	426	367	793
Okonimuria Kachari Gaon	499	507	1006
Porbatia Gaon	88	72	160
Tingrai habi Gaon	2648	2523	5171
Ahukhat Gaon	399	383	782
Bherjan Gaon	57	62	119
Borbheta Bangali Gaon	509	453	962
Chandmari Nepali gaon	736	742	1478
Changmai Gaon	158	152	310
Chikajan Gaon	209	227	436
Choto Tingrai TE54 FS(TE)	462	53	515
Dahutia Gaon	148	131	279
Gaharipam Gaon	767	731	1498
Gelapukhuri TE 258NLR Gr.(TE)	832	853	1685
Gelapukhuri TE 261NLR Gr.(TE)	176	181	357
Gelapukhuri TE 285NLR Gr.(TE)	200	210	410
Gelapukhuri TE 266NLR Gr.(TE)	583	610	1193
Hilikhaguri Gaon	605	581	1186
Hukanpukhuri TE Patta land(TE)	731	684	1415
Hukanpukhuri TE 37/73 NLR Grant (TE)	918	878	1796
Itakhuli TE 107 NLR	184	204	388
Itakhuli TE 129/125 NLR	896	941	1837
Jhinga Gaon	730	640	1370
Jugipathar Gaon	397	369	766
Gelapukhuri Gaon	1400	1411	2811
Keheng TE 23/145 OR	585	619	1204
Kukurekhuwa Gaon	264	249	513
Limbuguri TE 251/149NLR Gr.(TE)			0
Luhari Bongali Gaon	594	568	1162
Luhari Nepali Gaon	527	523	1050
Morankari Gaon	474	453	927
Na-Gaon	1368	1367	2735
Nakharai Bongali Gaon	143	125	268
Nakharai gaon	562	529	1091
No.1 Balupara Gaon	745	683	1428

No.2 Balupara Gaon	72	64	136
No. 2 Patia Pathar Gaon	238	220	458
Nunpuria Bongali Gaon	1200	1125	2325
Nunpuria Kaibotra Gaon	1127	1103	2230
Pakhorijan Gaon	1101	1019	2120
Hatigarh Gaon	161	172	333
Chandmari Gaon	322	293	615
Nakhari Dhekeri gaon	95	89	184
Podumoni Gaon	397	370	767
Hebeda Bongali Gaon	209	173	382
Tarajan Gaon	229	194	423
Lesengka Bangali Gaon	945	946	1891
Nokhroy T.E. 162/159 Nlr -149/146 Nlr	1401	1356	2757
Panitola Gaon	919	859	1778
Panitola T.E. No-68 Fs grant	461	500	961
Hebeda T.E. 176/179 Nlr	245	226	471
(B) Rural Area Population	42869	40153	83022
(A) + (B) Total Master Plan area population	110273	99138	209411

(Source : Census of India, Assam 2011)

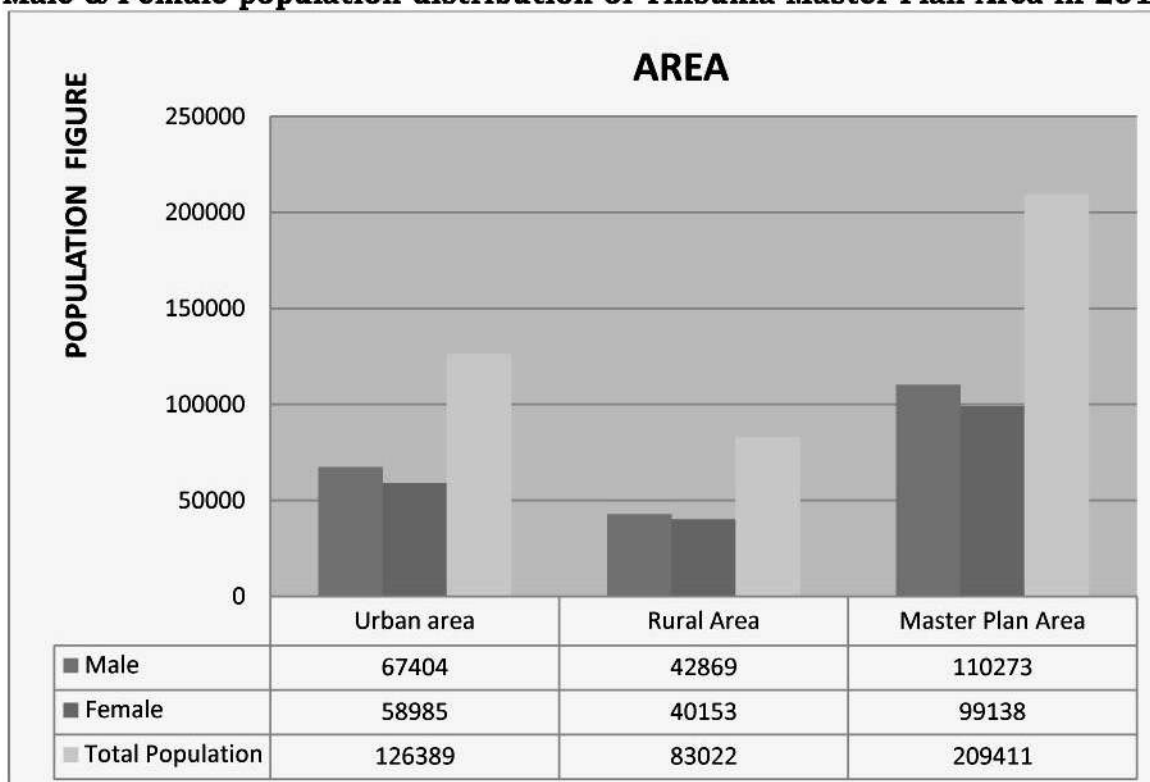
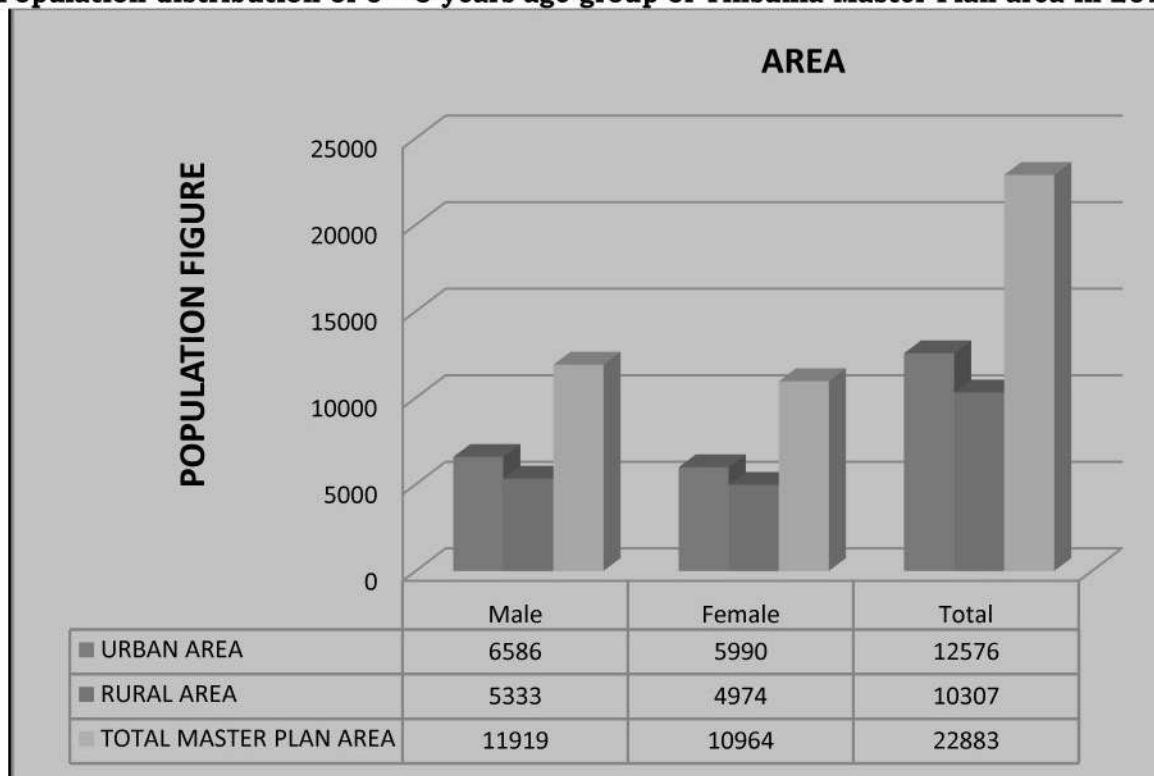
FIGURE NO.4**Male & Female population distribution of Tinsukia Master Plan Area in 2011**

TABLE NO. 6
Population distribution of 0 - 6 years age group of
Tinsukia Master Plan area in 2011.

Name	Population		
	Male	Female	Total
Tinsukia Municipal Board	5070	4617	9687
Outgrowth and Census town	1516	1373	2889
(A) URBAN AREA	6586	5990	12576
(B) RURAL AREA	5333	4974	10307
(A) + (B) TOTAL MASTER PLAN AREA	11919	10964	22883

(Source : Census of India, Assam 2011)

FIGURE NO. 5
Population distribution of 0 – 6 years age group of Tinsukia Master Plan area in 2011



2.1.1 Population Growth Rate

The purpose to provide facilities and services in community is to meet the physical, economic and social needs of the people. It is a study and understanding of the growth, distribution, composition and other characteristics of the population and trend are therefore the basic requirement for the wider range planning programmers. The objective of the master plan for Tinsukia is to cater to the various needs emerging from these studies in order to meet the aspirations of its residents for whom the plan is prepared.

Table No. 7
Growth of population in Tinsukia Municipal area

Year	Population	Decadal Growth Rate
1921	3080	-
1931	5160	67.53 %
1941	8338	61.59 %
1951	12245	46.86 %
1961	28468	132.49 %
1971	54911	92.87 %
1981	No census in Assam	
1991	73918	34.61 % (for 2 decades)
2001	85563	15.75 %
2011	99448	16.23 %

(Source : Census of India, Assam)

Figure No.-6
Growth of population in Tinsukia Municipal area

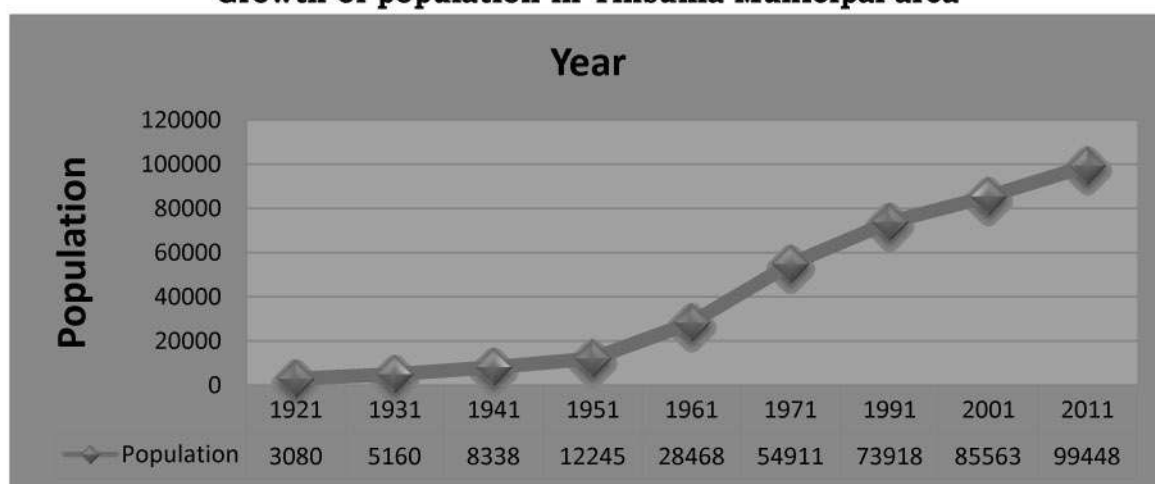


Figure No.-7
Decadal growth of population (in %) in Tinsukia Municipal area

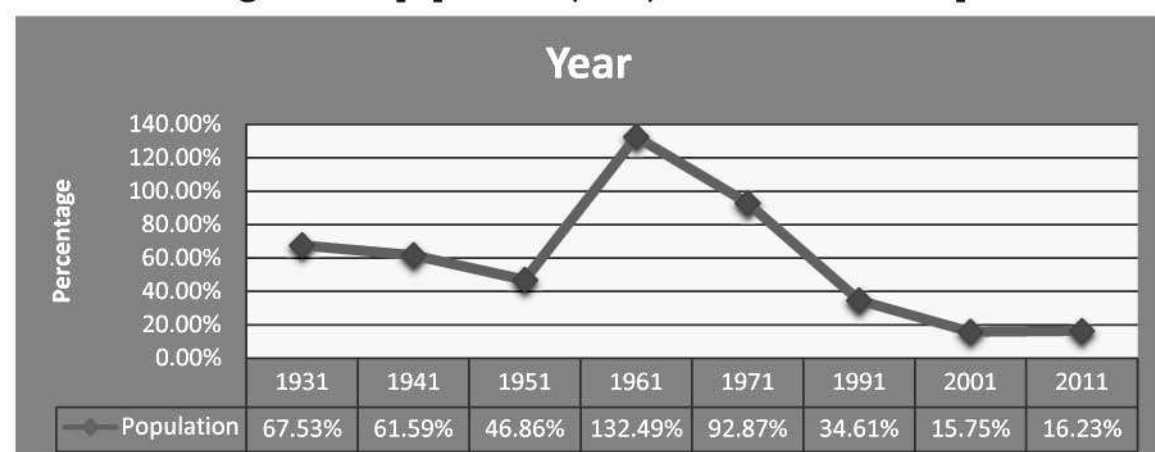


Table No. 8
Growth of population in Tinsukia Master Plan

Year	Urban Area			Rural Area			Master plan Area		
	Population	Decadal increase of population	Decadal Growth (%)	Population	Decadal increase of population	Decadal Growth (%)	Population	Decadal increase of population	Decadal Growth (%)
1991	88447			53842			142289		
2001	101957	13510	15.27	64943	11101	20.62	166900	24611	17.30
2011	126389	24432	23.96	83022	18079	27.84	209411	42511	25.47

(Source : Census of India, 1991, 2001 & 2011)

FIGURE NO.8
Population Growth & Percentage of Growth in TMPA

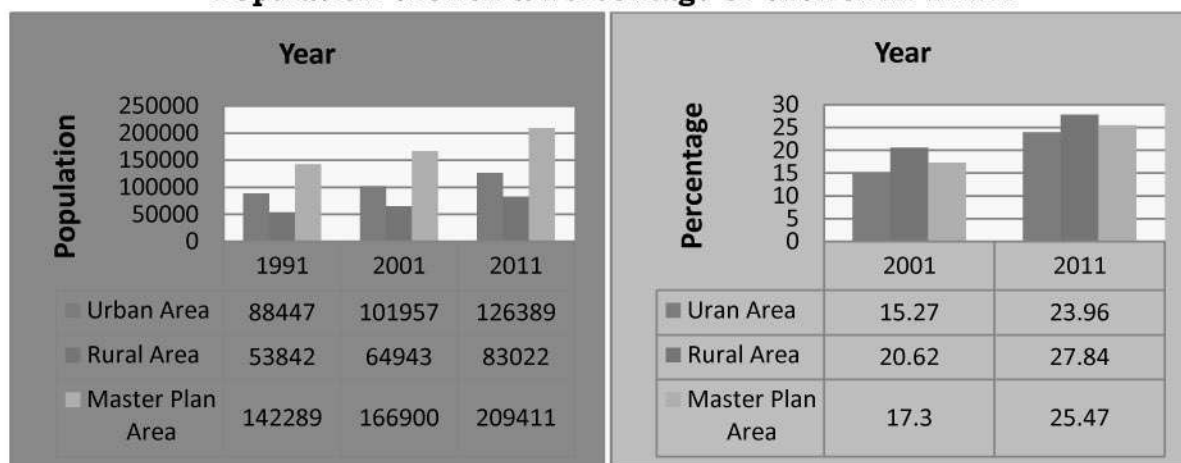


TABLE NO. 9
Population growth Rate of Assam and Tinsukia Master Plan Area: 1991 – 2011

Area	Population			Growth Rate in %	
	1991	2001	2011	1991-2001	2001-2011
Assam State					
TMPA	22.49	26.66	31.17	18.54	16.93
Urban	2.49	3.44	4.39	38.24	27.61
Rural	19.93	23.22	26.78	16.51	15.35
* Population in Millions					
Tinsukia Master Plan					
TMPA	1.42	1.67	2.09	17.3	25.47
Urban	0.88	1.02	1.26	15.27	23.96
Rural	0.54	0.65	0.83	20.62	27.84
* Population in Lakhs					

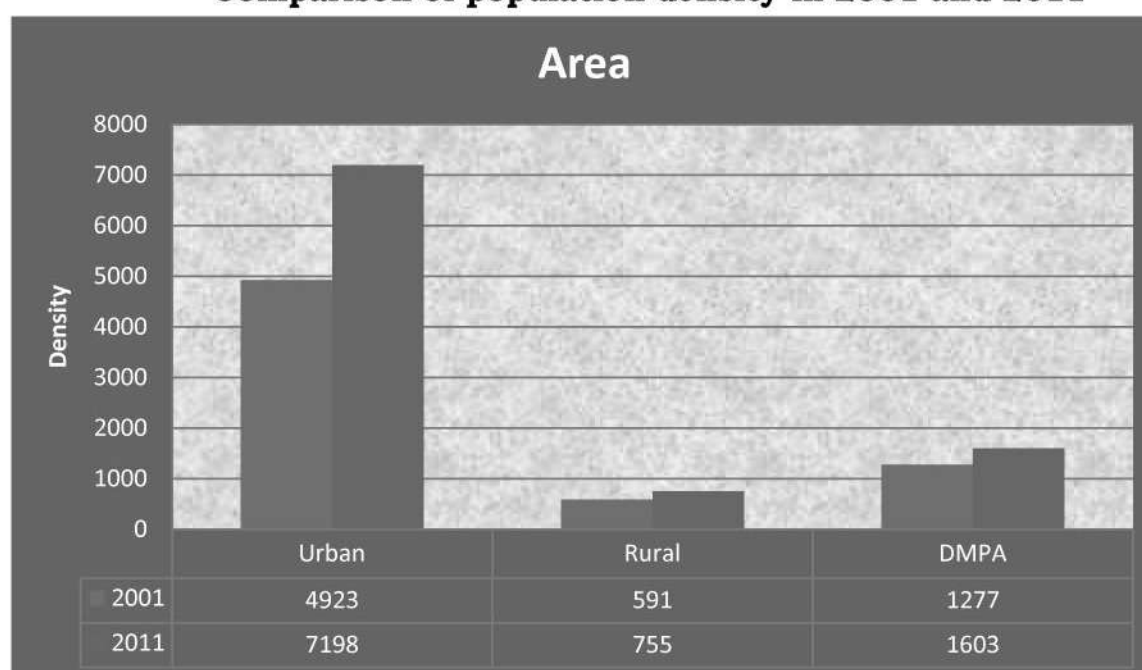
2.1.2 Population Density

The net density of population in Tinsukia municipal board area in 2011 is 9435 person per sq.km. In outgrowth and census town area the density is 3839 person per sq.km. As a whole in urban area the density is 7198 person per sq.km. In rural area of master plan the density is 755 persons per sq.km. If we consider the master plan as a whole the density of population in 2011 is 1603 person per sq.km. in Tinsukia master plan area.

TABLE NO-10
Comparison of population density in 2001 and 2011

Year	Urban area	Rural area	Master plan area
2001	4923 / Sq.km.	591 / Sq.km.	1277 / Sq.km.
2011	7198 / Sq.km.	755 / Sq.km.	1603 / Sq.km.

FIGURE NO-9
Comparison of population density in 2001 and 2011



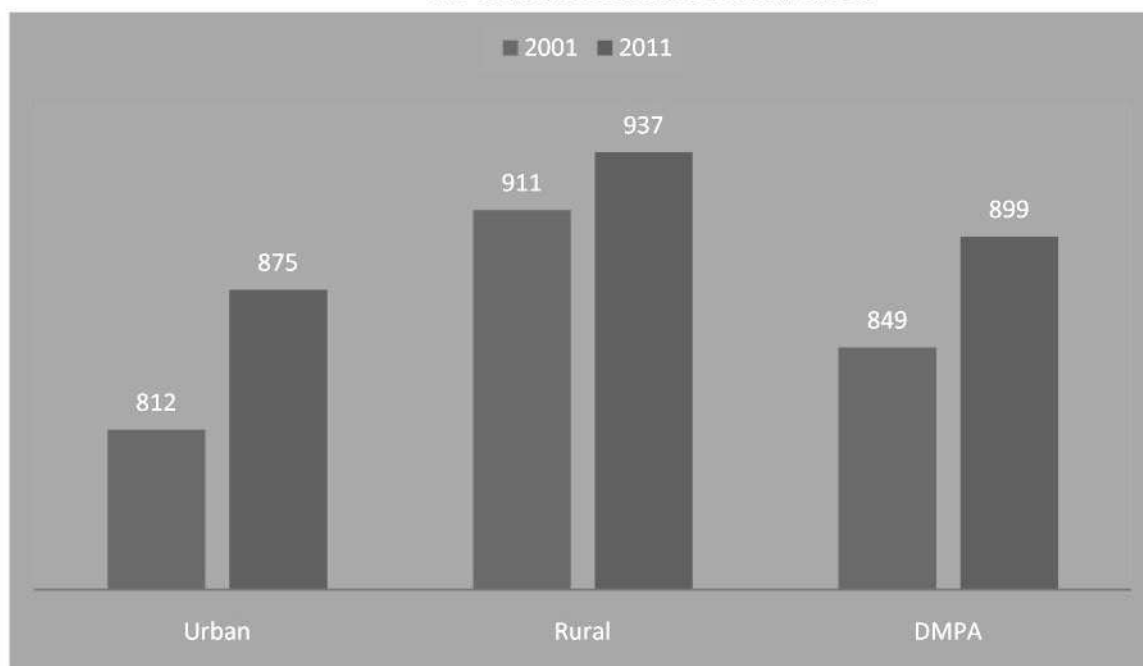
2.1.3 Sex Ratio

As per 2001 census the sex ratio in urban area of Tinsukia master plan was 812 which is increase to 875 in 2011 census. In rural area sex ratio increased from 911 in 2001 to 937 in 2011. In Tinsukia master plan area as a whole the sex ratio increases from 849 in 2001 to 899 in 2011. It has been noticed that the sex ratio of both total population and (0—6) age group in rural area as compared to urban area of master plan is higher both in the year 2001 and 2011. It is due to the fact that Tinsukia is mainly a commercial town and pre-dominance of male population in urban area for business activity. Sex ratio of Tinsukia master plan has been shown in the following table.

TABLE NO. 11
Comparison of Sex Ratio in 2001 & 2011
in Tinsukia Master Plan area

Year	Area	Male	Female	Sex-ratio
2001	Urban	56273	45684	812
	Rural	33989	30954	911
	Master Plan Area	90262	76638	849
2011	Urban	67404	58985	875
	Rural	42869	40153	937
	Master Plan Area	110273	99138	899

FIGURE NO-10
Comparison of Sex Ratio in 2001 & 2011
in Tinsukia Master Plan area



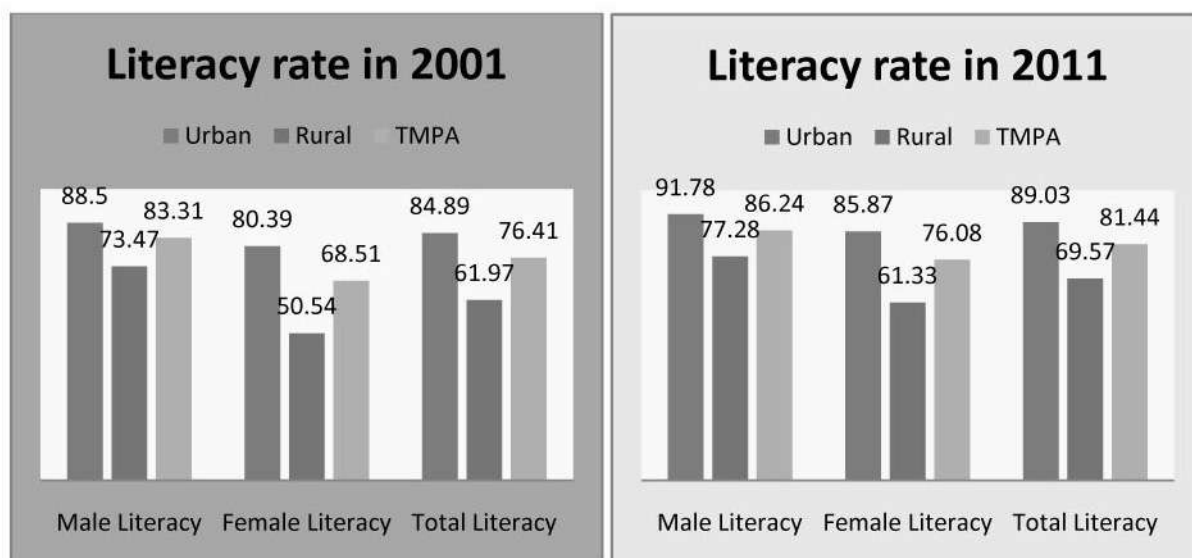
2.1.4 Literacy

The literacy rate of Tinsukia urban area as per census 2001 was 84.89% which has increased to 89.03% in 2011 just above state urban literacy rate of 88.88%. In rural area literacy rate increased from 61.97% in 2001 to 69.57% in 2011. In the same way, literacy rate of master plan area also increased from 76.41% in 2001 to 81.44% in 2011. The comparison of literacy rate in 2001 and 2011 for Tinsukia master plan area is given below:-

TABLE NO:-12
Comparison of literacy rate of TMPA in 2001 & 2011

LITERACY RATE OF TMPA - 2001												
Area	Total M pop	Total M pop Excluding 0-6 age	Actual M Lit pop	% Male Lit	Total F pop	Total F pop Excluding 0-6 age	Actual F Lit pop	% Female Lit	Total Pop	Total pop Excluding 0-6 age	Total Actual Lit Pop	% of Total Lit
Urban	56273	50338	44547	88.50%	45684	40447	32516	80.39%	101957	90785	77063	84.89%
Rural	33086	26539	19499	73.47%	31857	26731	13511	50.54%	64943	53270	33010	61.97%
Total TMPA	89359	76877	64046	83.31%	77541	67178	46027	68.51%	166900	144055	110073	76.41%
LITERACY OF TMPA - 2011												
Urban	67404	60818	55817	91.78%	58985	52995	45506	85.87%	126389	113813	101323	89.03%
Rural	42869	37536	29008	77.28%	40153	35179	21577	61.33%	83022	72715	50585	69.57%
Total TMPA	110273	98354	84825	86.24%	99138	88174	67083	76.08%	209411	186528	151908	81.44%

FIGURE:-11
Comparison of literacy rate of TMPA in 2001 & 2011



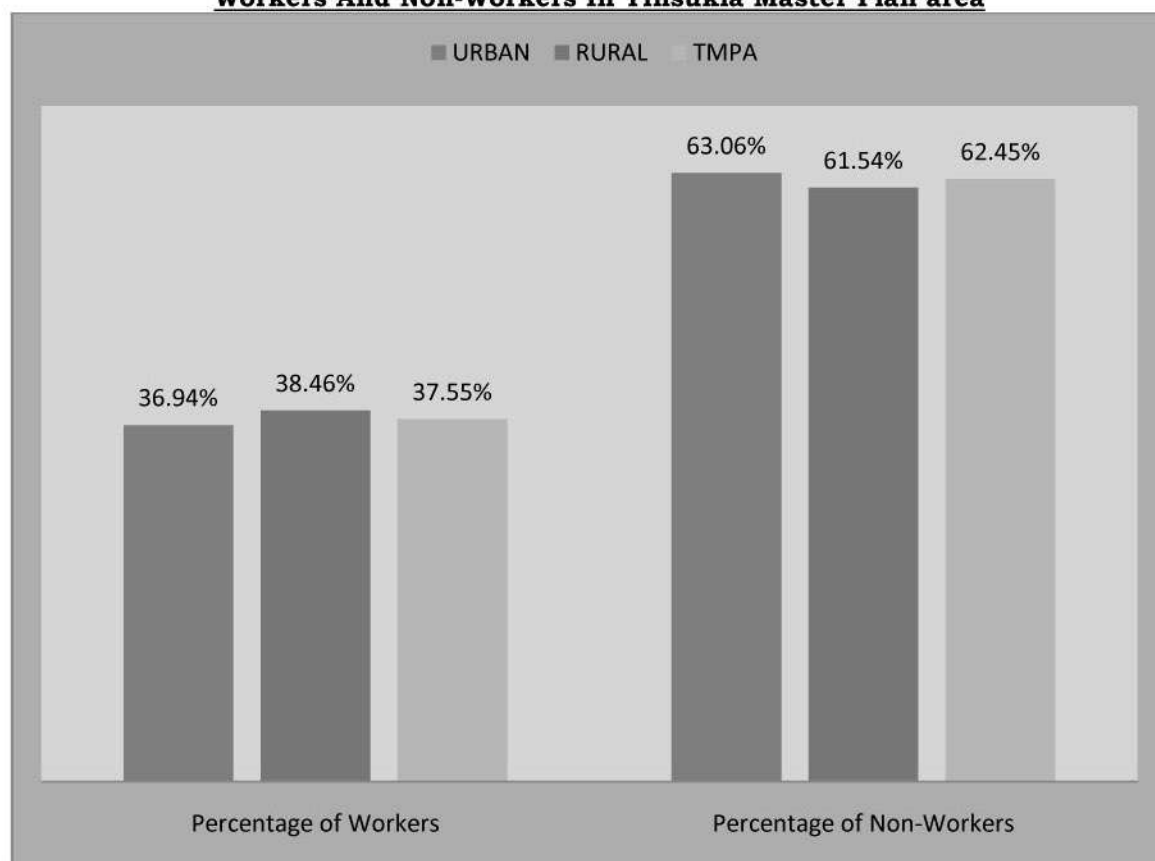
2.1.5 Working and Non-Working Population

Out of total population of 209411 persons in Tinsukia master plan area the working population is 78624 persons equivalent to 37.55% which is just lower than the national average of 38%. The balance non-working population 130787 that is 62.45% mainly consist of school going children, women group and unemployed section of the population who are seeking employment in white collared jobs as well as investment opportunities in business. The breakup of this non-working population comprises of 11 % from the age group up to 6 years, 18% from age group of 6-15 years, 3% from the age of above 60 years and the rest is women group.

TABLE NO:-13
Workers And Non-Workers In Tinsukia Master Plan area

Category	Urban Area			Rural Area			Total (Master Plan Area)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Main Workers	36966	5173	42139	18395	5773	24168	55361	10946	66307
Marginal Workers	3156	1397	4553	4636	3128	7764	7792	4525	12317
Total Workers	40122	6570	46692	23031	8901	31932	63153	15471	78624
Non-workers	27282	52415	79697	19869	31221	51090	47151	83636	130787
Percentage of Workers	59.52	11.14	36.94	53.69	22.18	38.46	57.25	15.61	37.55
Percentage of Non-workers	40.48	88.86	63.06	46.31	77.82	61.54	42.75	84.39	62.45

FIGURE NO:-12
Workers And Non-Workers In Tinsukia Master Plan area



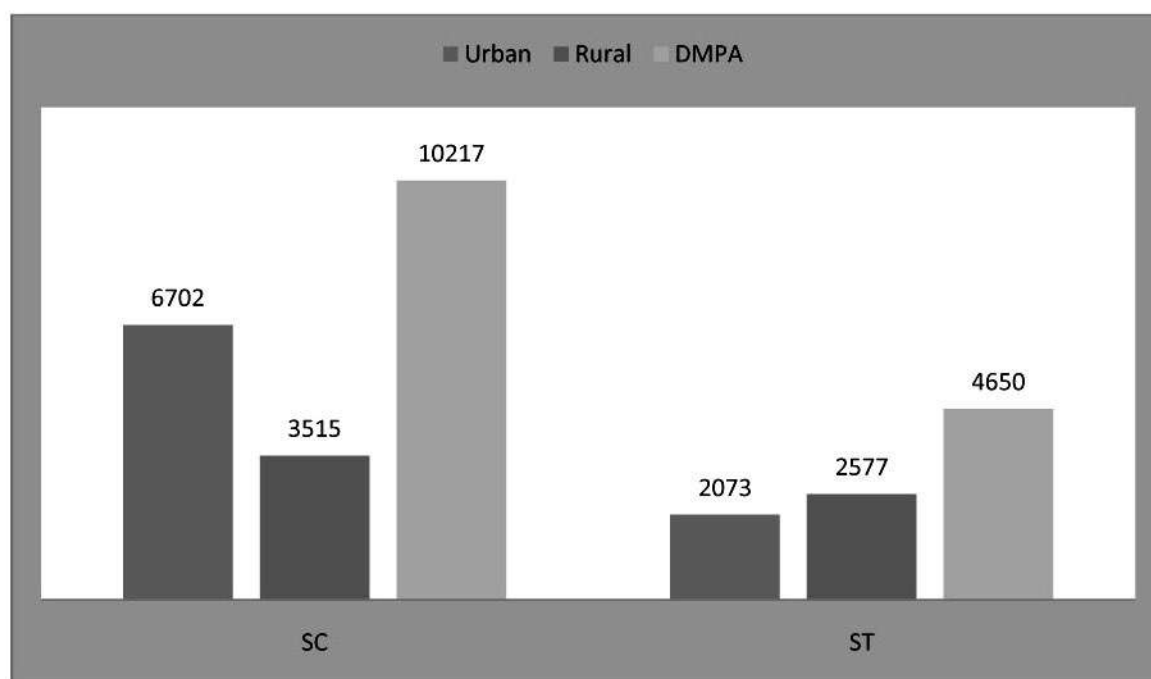
2.1.6 SC-ST Population

The details of SC and ST population for the Tinsukia master plan area (TMPA) is shown in the following table.

TABLE No-14
SC and ST population of TMPA in 2011

Caste	Urban	Rural	TMPA
SC	6702	3515	10217
ST	2073	2577	4650

FIGURE :-13
SC and ST population of TMPA in 2011



2.2 Migration Population

Migration into Assam is not a recent phenomenon; it is an age-old process since the British colonial period. However, it has occurred on a relatively larger scale in more recent decades particularly after 1971. The migration from the other states of India contributes significant volume of population growth in Assam. The inter-state migrant into Assam contributes about 2.39 per cent and 1.93 per cent during 1991 and 2001.

The existence of labour market, employment prospects in the destination area attracts the huge influx of migrants from the different districts of India, leading to structural disequilibrium and cultural mess-up in the region. The differential natures of migrant population from the different parts of the country lead to the modification of the original population structure of the state of Assam. It also leads to the population

redistribution among the states of the country, creating tension or pressure on the land of Assam and its indigenous population.

The robust local economy of Tinsukia once attracted scores of people from other parts of the country to settle here in search of jobs and business opportunities. In addition to Assamese and various indigenous ethnic groups, the town is home to hundreds of people who migrated from undivided Bengal, Bihar, Uttar-Pradesh, Orissa and Jharkhand to change their fortunes. Tinsukia also serves as a transit point to the adjoining rural belts and Arunachal Pradesh's landlocked areas.

During 2001, out of the total population in Assam, 1.94% population are migrants from other states of India. In Tinsukia district the total migrated population is 50983 persons in 2001 which is the highest share of migrants (4.43%) among the districts of Assam.

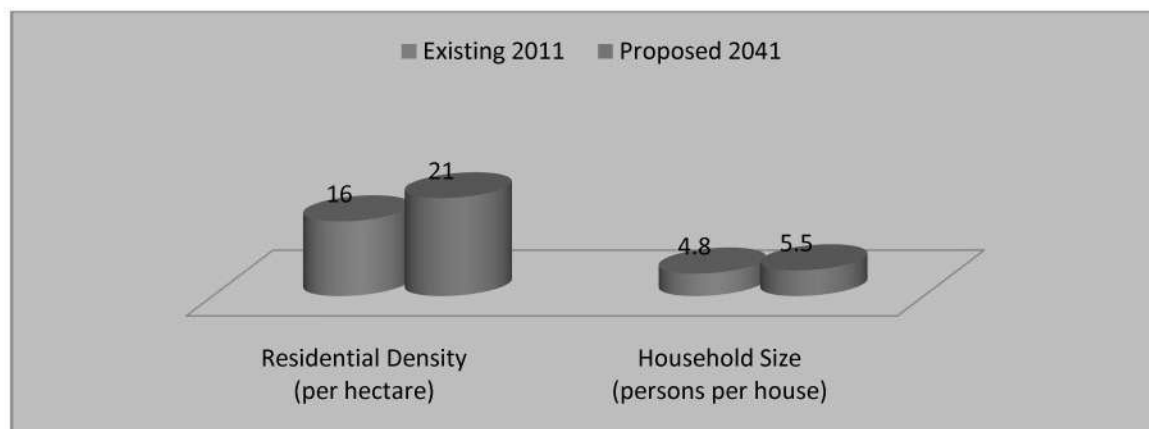
2.3 Residential Density and Size

There are about 43929 residential houses in the year 2011 in Tinsukia master plan area. The total population of planning area is 209411 persons in 2011, as such, household size is 4.8 persons. Since in Tinsukia master plan the existing land used for residential purposes is 2726.62 hectares, as such existing residential density is 16 dwelling units per hectare. As per projection, gross housing requirement in the planning area is 89064 dwelling units in 2041 and proposed land uses for residential purpose is earmarked in the plan is 4300.66 hectares, as such the residential density in the year 2041 will be 21 dwelling units per hectare. The household size in 2041 will be 5.5 persons per house.

TABLE No-15
Existing and proposed Residential Density
and Household size comparison in 2011 and 2041

	Existing 2011	Proposed 2041
Residential Density	16 / hectare	21 / hectare
Household Size	4.8 persons / house	5.5 persons / house

FIGURE No-14
Existing and proposed Residential Density
and Household size comparison in 2011 and 2041



2.4 Population projection

Population projection is a forecasting tool that helps to estimate the changes in population size and demographic structure. It is mandatory for the Govt. Policy makers and planners of Assam, in order to determine the future demand for basic human needs such as food, water, education, energy and services and to forecast future demographic characteristics.

The main objective is to provide or undertake activities aimed at achieving population stabilization, sustainable economic growth, social development and environmental protection by 2041.

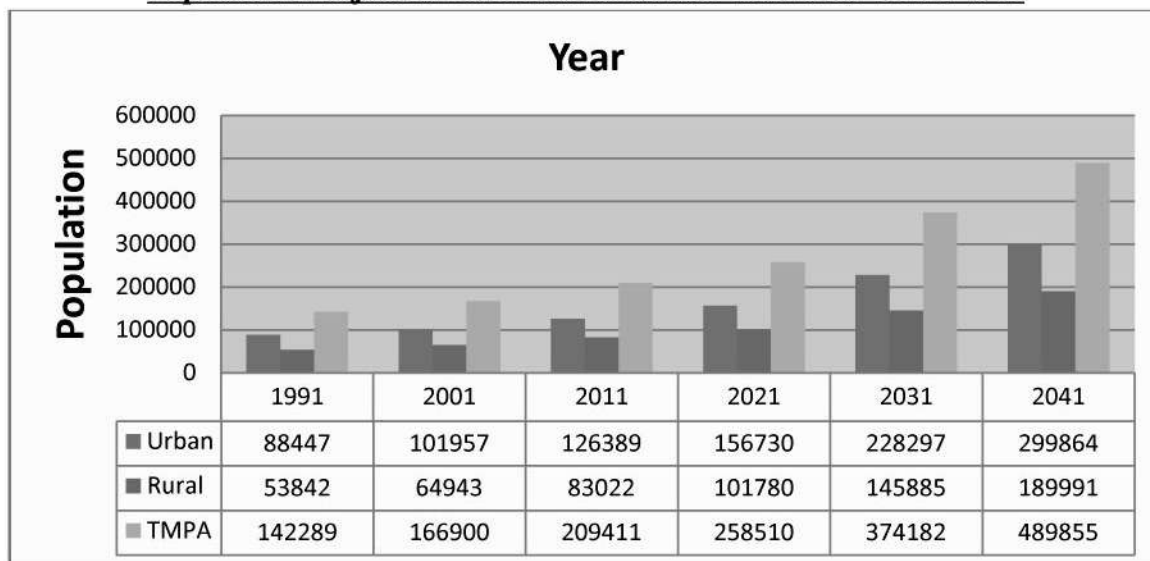
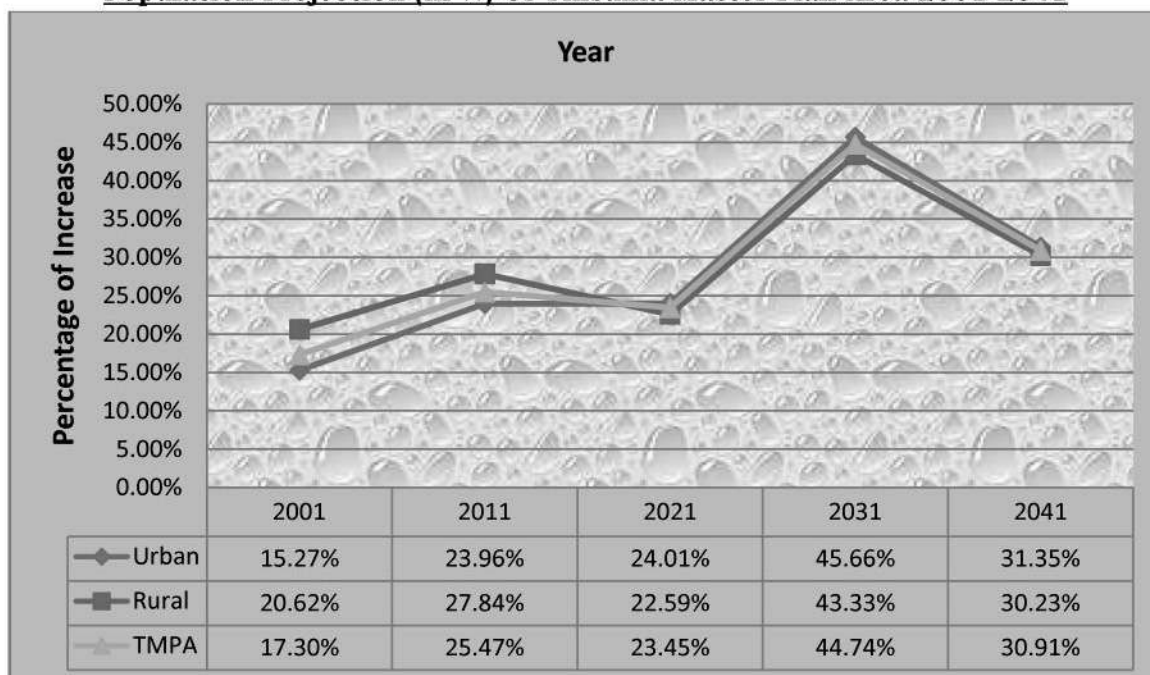
Population projection is a scientific attempt to keep into the future population scenario, conditioned by making certain assumptions, using data to the past available at that point of time. Assumption's used and their probability of adhering in future forms a critical input in this mathematical effort. Predicting the future course of human fertility and mortality is not easy, especially when looking beyond much further in time. Medical and health intervention strategies, food production and its equitable availability, climatic variability, socio-cultural setting, economic condition and a host of other factors influence population dynamics, making it a somewhat unpredictable exercise. Therefore much caution must be exercised when either making or using the population projection and the context of various conditions imposed, should not be lost sight of on the basis of past behaviour and the likely future scenario assumed.

The final population projections of Tinsukia master plan area have thus been arrived at with the entire base population of 1991 accounted for as the natural population, by adding to the natural population the increase due to the natural growth plus the increase due to emigrational flow of trade & commerce including natural increase of migrants. The following table shows the population projection up to 2041 for Tinsukia master plan area.

TABLE NO - 16
Population Projection Of Tinsukia Master Plan Area 1991-2041

YEAR	Urban Population	% of increase	Rural Population	% of increase	Master Plan Area Population	% of increase
1991	88447		53842		142289	
2001	101957	15.27 %	64943	20.62 %	166900	17.30 %
2011	126389	23.96 %	83022	27.84 %	209411	25.47 %
2021	156730	24.01 %	101780	22.59 %	258510	23.45 %
2031	228297	45.66 %	145885	43.33 %	374182	44.74 %
2041	299864	31.35 %	189991	30.23 %	489855	30.91 %

Source: Tinsukia master plan area population of 1991, 2001 and 2011 are from Census of India, Assam and 2021, 2031 and 2041 population figures estimated by Town & Country Planning, Dibrugarh.

Figure-15**Population Projection Of Tinsukia Master Plan Area 1991-2041****Figure-16****Population Projection (in %) Of Tinsukia Master Plan Area 2001-2041**

CHAPTER -3

3. ECONOMIC BASE AND EMPLOYMENT

3.1 Formal Sector

Sector which encompasses all jobs with normal hours and regular wages and are recognized as income sources on which taxes must be paid are known as formal sector. In local terms, organised sector or formal sector in India refers to licensed organisations, that is, those who are registered. Only 6 (six) per cent of India's working population is part of the formal sector. The productivity in formal sector is high in comparison to informal sector and also offers higher wages to its employees.

Tinsukia district is the 2nd highest registered small tea growers in Assam after Dibrugarh district in 2020. Tinsukia district is the 2nd highest Gross Domestic Product district at current prices in Assam after Kamrup metro due to mainly highest tea producing district in Assam.

An industrial estate was constructed by the industry deptt. of state Government in a plot of land measuring 112 Bigha (32 Acre) during the year 1958 at Borguri, near DC office. In the industrial estate, 50 sheds were constructed and allotted. The functional industrial units are as follows:

- | | |
|-------------------------------|---------------------------|
| (1) Poly products | (2) Bamboo stick |
| (3) Steel fabrication | (4) Steel trunk |
| (5) Bamboo ply mats | (6) MS Bar, rods |
| (7) Calcined Petroleum coke | (8) Elastic fibre |
| (9) Jute bag | (10) Steel products |
| (11) Plastic trend | (12) Engineering workshop |
| (13) Steel furniture | (14) Fishing Net Ball |
| (15) Water purification plant | (16) Tyre retreading |
| (17) Skaldic Steel | (18) Bus body building |
| (19) Tea machinery | (20) Looking glass |
| (21) Aluminium Utensil | (22) Plastic products |
| (23) Spice grinding | (24) Wooden furniture |
| (25) Transformer repairing | (26) Food products |
| (27) Medicine | (28) Readymade garments |
| (29) Bamboo mat board | (30) Rice and Atta |
| (31) Printing Press | |

The Plastic Park was established at Gelapukhuri. The Integrated Infrastructure Development Projects were established at Parbotipur.



Plastic Park

In Tinsukia there is a vast scope for establishing crude oil related ancillary industries due to the nearby oil refinery of Digboi and Oil India Limited of Duliajan. As such this plan desires to draw the attention of the Govt. for creation of a conducive atmosphere for optimum use of natural resources as well as by products of oil industry by the public, private sector and public-private partnership mode to build up a sound economic and industrial base in the town.

3.2 Informal Sector

The informal sector is that part of an economy which is neither taxed nor monitored by any form of Government. Activities of the informal economy are not included in the GNP. The informal sector makes up a significant portion of the economies in poor state like Assam as well as in Tinsukia region. The informal sector of Tinsukia region provides critical economic opportunities for the poor and has been expanding rapidly since the 1990s. The informal sector is largely characterised by several qualities such as easy entry, meaning anyone who wishes to join the sector can find some sort of work which will result in cash earnings, a small scale of operations and skills gained outside of a formal education. Most workers in the informal sector, even those are self-employed or wage workers, do not have access to secure work, benefits, welfare protection or representation. The most prevalent types of work in the informal economy are household industry workers and street-vendors which are most common in TMPA. Home based workers are more numerous while street-vendors are most visible.

Tinsukia is bounded by tea garden and Dibru-Saikhowa sanctuary. Although the region is rich in forest resources these have not been exploited fully. There is a good scope for setting up of various wood based cottage industries like safety matches, tea chests, furniture and pre-fabricated housing units etc.

The industrial development targets as proposed above can be achieved through private sector & Governmental agencies by providing suitable industrial land with necessary infrastructure like roads, uninterrupted power, water and drainage and subsidy on power tariff, financial assistances in the form of soft loan etc. The present concept of public-private partnership (PPP) can also be adapted for faster and smooth development of industries.

Tinsukia town is the nerve centre of business & service of that area. People of nearby areas use to come here to sell their produce and to buy necessary goods for their domestic consumption. There are a number of markets in Tinsukia, such as Prakash Bazar, New Market, Bor Bazar, Daily Bazar, Bhutiya Market, Siding Bazar etc. These markets will not only fulfill the demand for Tinsukia and its suburbs but also supply the essential commodities to the people of border areas of Arunachal Pradesh. These markets have played an important role in the economic expansion of Tinsukia town.

TABLE No-17
Name of Markets under Tinsukia Municipal Board

Sl.No	Name	Address	Ward No.	Area
1	Daily market	GNB Road	12	2B-2K-17L
2	Tinkunia market	AT Road	15	2B-1K-12.60L
3	Khageswar Bazar	Parbatia	7	5400 Sqft
4	Raja Ali market	GNB Road	11	8000 Sqft
5	Sunday hut	GNB Road	11	8 B-1K-14L
6	Daily Vegetable market	GNB Road	12	1 B-0K-14L
7	Fish market	GNB Road	12	
8	Tamul bari Market	S Dohutia Road	15	6000 Sqft
9	Na-pukhuri	LBT Road	4	2000 Sqft
10	Hemanta bazaar	Rangagora Road	9	2500 Sqft

Source: Tinsukia Municipal Board

TABLE No-18
List of Category wise nature of trade in Tinsukia Municipal Board

Sl.No	Name of trade	Number
1	Motor parts	256
2	Hardware	642
3	Hotel cum Restaurant / Lodging	213
4	Retail & Wholesale Grocery	1242
5	Retail & Wholesale Stationary	898
6	Textile	496
7	Supply	2052
8	Engineering works	60
9	Factory	82
10	Electrical	268
11	Electronic goods	103
12	Fertilizer	151
13	Computer sales service	134
14	Car & bike dealer	22
15	Cycle shop	25
16	Foreign liquor shop	49
17	Wholesale fish	78
18	Scrap	87
19	Tailoring	239
20	Gold smith	205
21	Shoes	154
22	Bakery	58
23	Confectionary	159
24	Bar	21
25	Cement dealer	54
26	Furniture	174
27	Printing press	107
28	Leather trade	65
29	Meat shop	46
30	Steel fabrication	98
31	Retail & wholesale pharmacy	341
32	Saloon & Beauty parlour	145
33	Motor garage	49
34	Photography	39
35	Book stall	18
36	Readymade garments	644

Source: Tinsukia Municipal Board

3.3 Occupational Pattern

Occupational structure depicts the characteristics of employment for livelihood of the people living in a particular planning area. The engagement of people in agriculture, trade, commerce, industry and white-collar jobs etc. is known as the occupation and employment character. The percentage of working population is 36.94% for urban area and 38.58%

for rural area in the year 2011. In the year 2011, in Tinsukia master plan area as a whole, the percentage of working population is 37.59% out of total population. Since Tinsukia is known as commercial town and it is also reflected in the occupational pattern of urban area where almost 96.48% of the population get their livelihood from tertiary sector.

TABLE NO.-19
Sector wise distribution of workers in the master plan area in 2011

Sl. No.	Category	Urban Area		Rural Area		Tinsukia Master Plan area	
		No. of workers	% of total Urban workers	No. of workers	% of total Rural workers	No. of workers	% of total TMPA workers
1	Primary Sector (Agriculture)	619	1.33	6550	20.45	7169	9.11
2	Secondary Sector (Household Industry)	1023	2.19	1023	3.2	2046	2.60
3	Tertiary Sector (Others)	45050	96.48	24454	76.35	69504	88.29
	TOTAL	46692	100.00	32027	100	78719	100

FIGURE No. 17
Sector wise distribution of workers in the master plan area in 2011

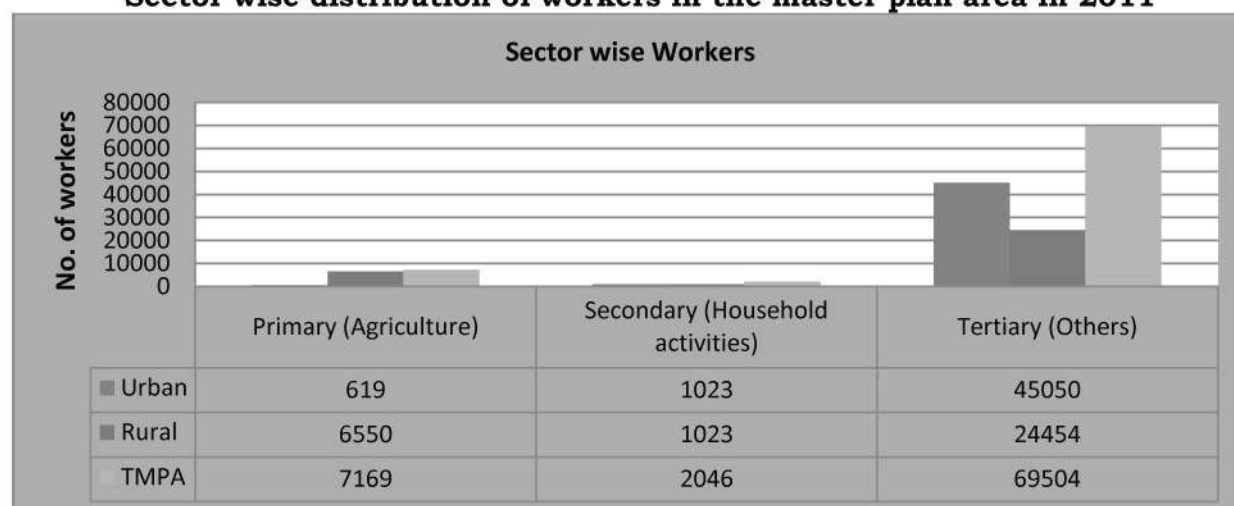
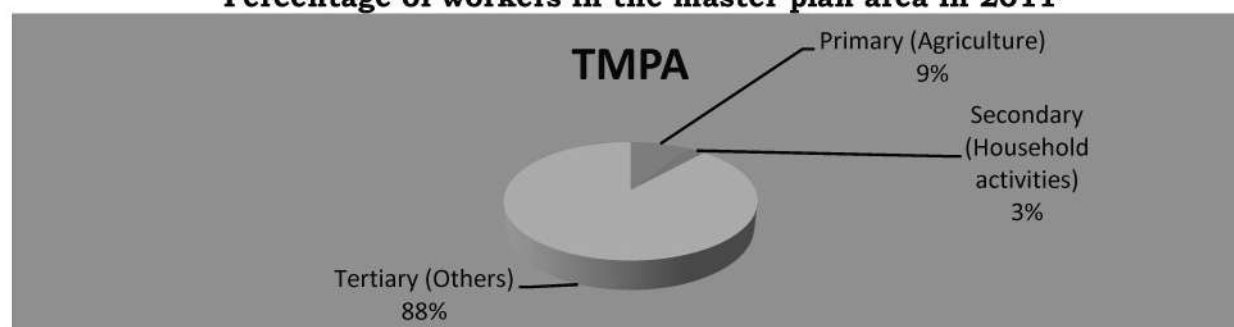


FIGURE No. 18
Percentage of workers in the master plan area in 2011



The above table reveals that the number of people engaged in primary sector is higher in rural area as comparison to the urban area which is a normal phenomenon in India. The engagement of people in tertiary sector is higher in urban area than in rural area due to the fact that Tinsukia is the 2nd largest commercial town in Assam.

Tinsukia is place of scenic beauty of nature with various historical ponds and monuments and has a pleasant weather that attracts tourist to visit this place and as a result tourist sector is expanded. Expansion of micro, cottage and service industry in the town and as well as in the out skirts of the town also generates employment opportunities. In view of the above, the question of livelihood can be separated on the following heads as mentioned below:-

- (a) Engagement in agricultural activities.
- (b) Engagement in industrial activities including micro and household industries.
- (c) Engagement in trade ,commerce and service sector.
- (d) Serving as Govt. employee & private employee.

CHAPTER- 4

4. HOUSING AND SHELTER

4.1 Housing Scenario

Housing is a basic necessity of human beings. Despite various efforts to solve the housing problem with various policies, there is a huge gap between the supply and the demand for the housing in Assam in general and Tinsukia town in particular. A section of population in Tinsukia either have no place to live in or living under highly unhygienic, inhuman condition and deprivations. Lack of privacy, absence of minimum basic amenities, use of substandard building materials and unhygienic surroundings dominates the scene of settlements. In Tinsukia, while the housing problem in the rural areas, by and large is qualitative in nature and the problem in the urban areas is largely quantitative. The uncontrolled growth of population in urban areas due to migration and other factors have created a high magnitude of housing and infrastructure problem. Due to migration of rural population to the town, available vacant spaces in the urban areas are slowly being converted to unplanned, unhygienic built up area. Moreover, cost of land in the urban area is also increasing. People in the low and middle income group even find it difficult to acquire the land at the present prevailing cost.

The housing pattern of Assam, including Tinsukia region have living habits of such a kind that is different from other states and region of the country. There is a general feeling in Tinsukia region that the basic problem is up gradation of existing units and there is very little need to be done to provide a roof for the utterly shelter less population as the category of such household is very negligible in the region.

An average household size in TMPA has 4.8. The household size in urban area (4.89 members) is higher compared to rural areas (4.59 members).

It is true that development of our country is dependent on the physical and mental health of the people. People who sleep on streets or who live in unhygienic houses cannot fully develop emotionally, intellectually, economically, culturally or as a family. In fact, inadequate and insecure shelter can lead to social and political instability which eventually hampers economic development of the country.

To address this problem, Government of India introduced a new Housing scheme in 2014 namely Pradhan Mantri Awas Yojana (housing for all by 2022). If this scheme does works it would at least help to reduce India's major contribution with one of the highest homeless populations in the world. Under the PMAY, the main proposal was to construct 20 million homes for those people belonging to the Low Income families and Economically Weaker Sections in the identified urban and semi – urban areas by 2022. Accordingly, Tinsukia Municipal Board is also working to provide houses to the poor as per guideline.

TABLE NO-20**Physical status of PMAY(U) houses under Tinsukia MB**

Name of the ULB	Actual Beneficiaries	1 st Installment Received	2 nd Installment Received	3 rd Installment Received	% of Completion (Got 1.70 Lakhs)
Tinsukia	2776	2644	1901	683	62%

*Source: PMAY(U) Tinsukia***4.2 Housing Supply Mechanism**

Housing supply is the main role of the State Government to improve living condition to the inhabitants either by directly providing houses or by financial assistance. The Government has adopted different policies to solve the housing problems especially for poor and low income group. However housing supply must address all social groups in the state including housing in urban areas, semi-urban areas and rural areas. In the recent years private building's and developer's come forward to solve the problems of housing in urban areas of the state by constructing residential apartments. Such practices are also seen in Tinsukia. In the rural areas of master plan, a few houses are constructed under various centrally sponsored housing schemes. The plan recommends that State Housing Board, Development Authority should come forward to build housing colonies at Tinsukia for all sections of people of the state considering its unique scenic beauty.

4.3 Housing Condition, Type of Structure etc.

The following table's shows the number and percentage distribution of population and household in respect of different living condition such as structure of house, source of lighting, source of drinking water, type of fuel used for cooking, Banking and specified assets, drainage connectivity and availability of kitchen.

TABLE NO.21**Percentage distribution of households living in permanent, semi-permanent and temporary houses in 2011 for Tinsukia Master Plan area.**

Name of Area	No. of H/ Hs	Permanent	Percentage	Semi-Permanent	Percentage	Temporary	Percentage
Urban	25845	14662	56.73	9883	38.24	1300	5.03
Rural	18084	7248	40.08	8107	44.83	2729	15.09
Total	43929	21910	49.88	17990	40.95	4029	9.17

FIGURE NO.19
Distribution of households living in permanent, semi-permanent and temporary houses in 2011 for Tinsukia Master Plan area.

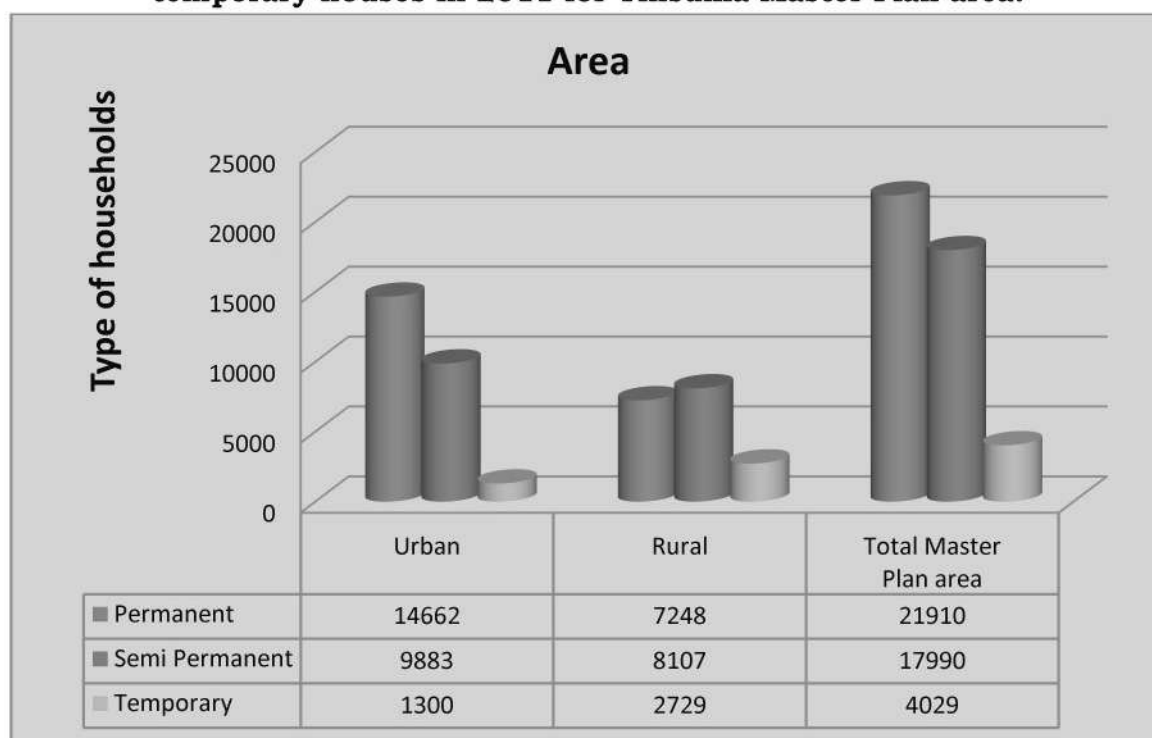


TABLE NO.22
Number and % of households by main source of lighting in 2011 for Tinsukia Master Plan area

	Urban	Percentage	Rural	Percentage	Total	Percentage
Electricity	22736	87.97	10720	59.28	33456	76.16
Kerosene	2983	11.54	7216	39.9	10199	23.22
Solar	23	0.09	29	0.16	52	0.12
Other Oil	18	0.07	45	0.25	63	0.14
Any other	36	0.14	23	0.13	59	0.13
No lighting	49	0.19	51	0.28	100	0.23
TOTAL	25845	100	18084	100	43929	100.00

FIGURE NO.20
Number of households by main source of lighting in 2011
for Tinsukia Master Plan area

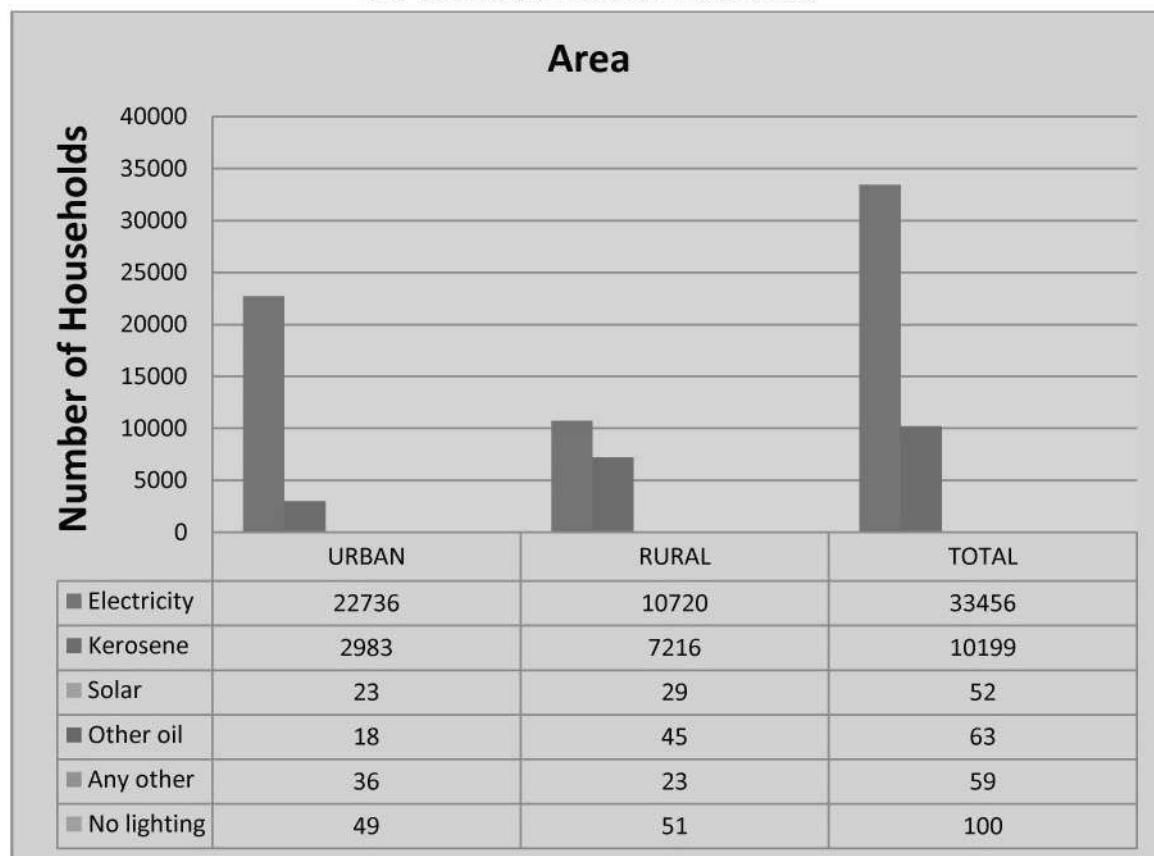


TABLE NO.23
Number and percentage of households by main source of drinking water in
2011 for Tinsukia Master Plan

Source of Water	Urban	Percentage	Rural	Percentage	Total	Percentage
Tap water from treated source	3869	14.97	608	3.36	4477	10.19
Tap water from untreated source	1858	7.19	134	0.74	1992	4.53
Covered well	75	0.29	94	0.52	169	0.38
Uncovered well	274	1.06	515	2.85	789	1.80
Hand pump	11796	45.64	11930	65.97	23726	54.01
Tubewell borehole	7808	30.21	4488	24.82	12296	27.99
Spring			4	0.02	4	0.01
River/Canal	28	0.11	36	0.2	64	0.15
Tank/Pond	78	0.3	65	0.36	143	0.33
Other sources	59	0.23	210	1.16	269	0.61
TOTAL	25845	100	18084	100	43929	100.00

FIGURE NO.21
Number of households by main source of drinking water in 2011
for Tinsukia Master Plan

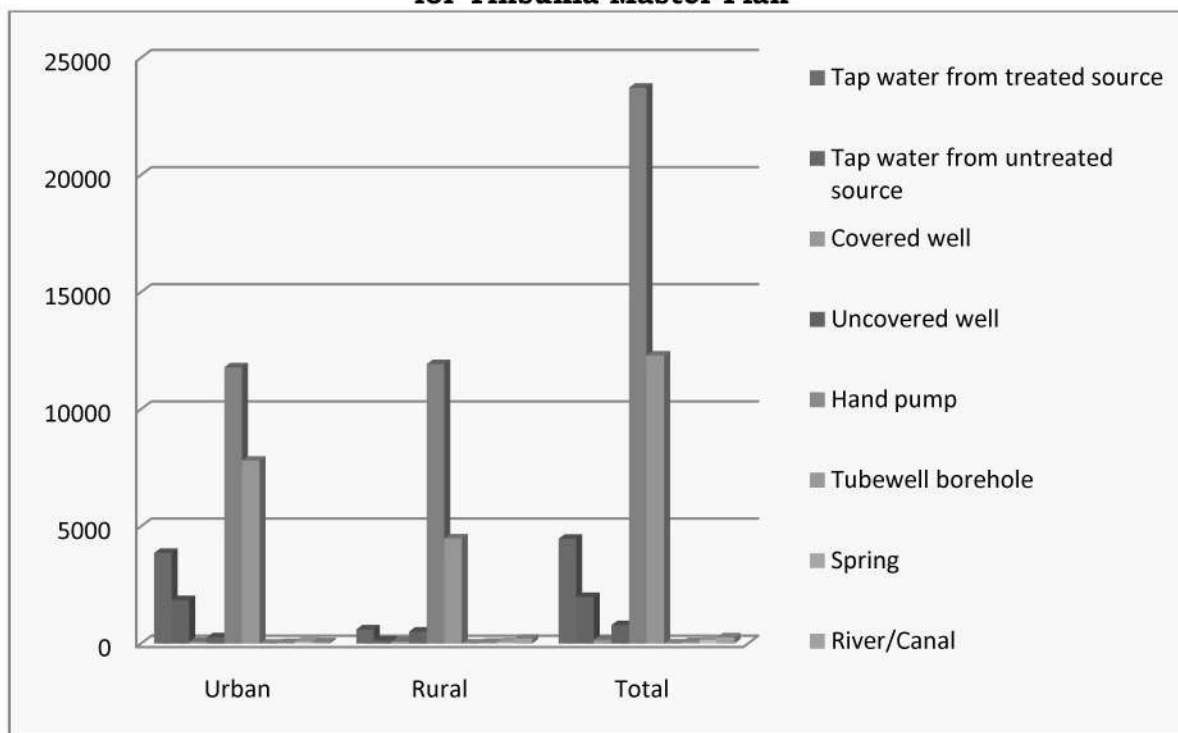


FIGURE NO.22
Percentage of households by main source of drinking water in 2011
for Tinsukia Urban area

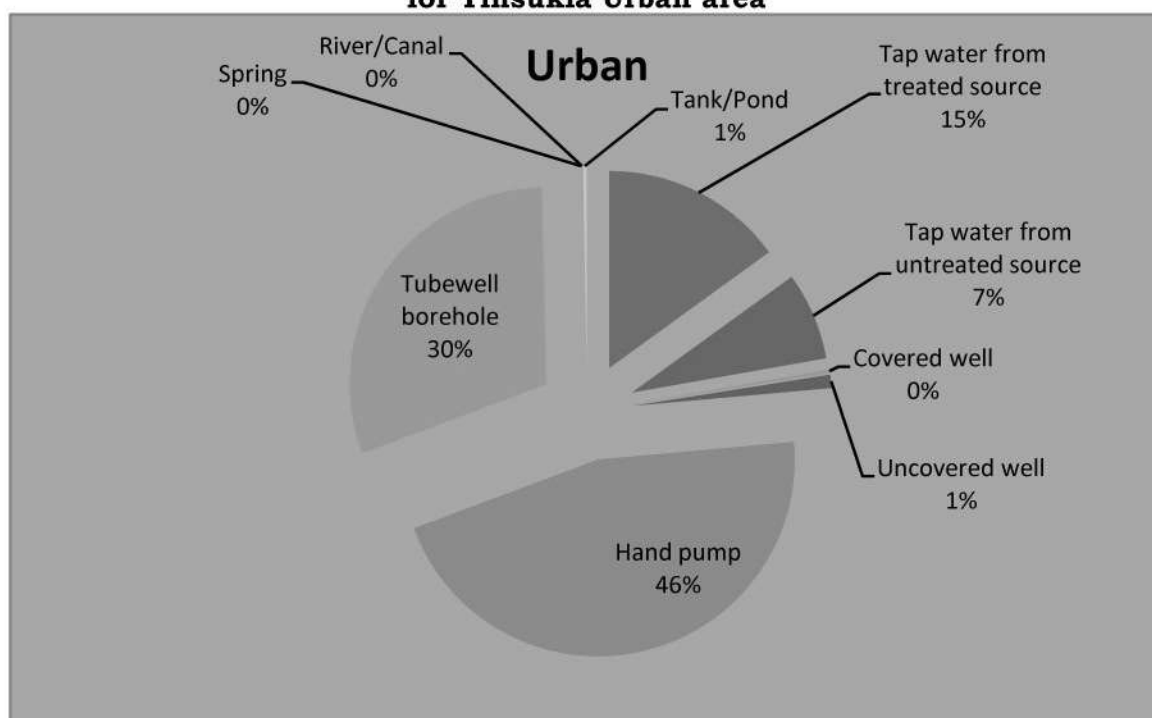


FIGURE NO.23
Percentage of households by main source of drinking water in 2011
for Rural area

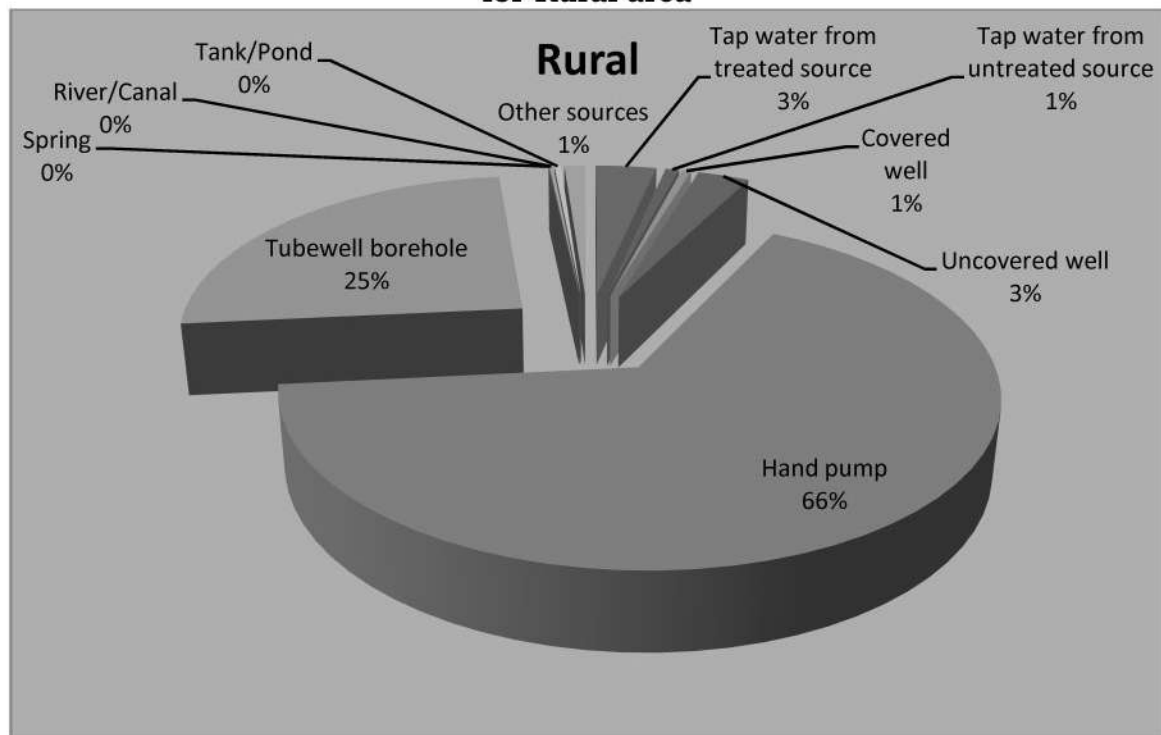


FIGURE NO.24
Percentage of households by main source of drinking water in 2011
for Tinsukia master plan area

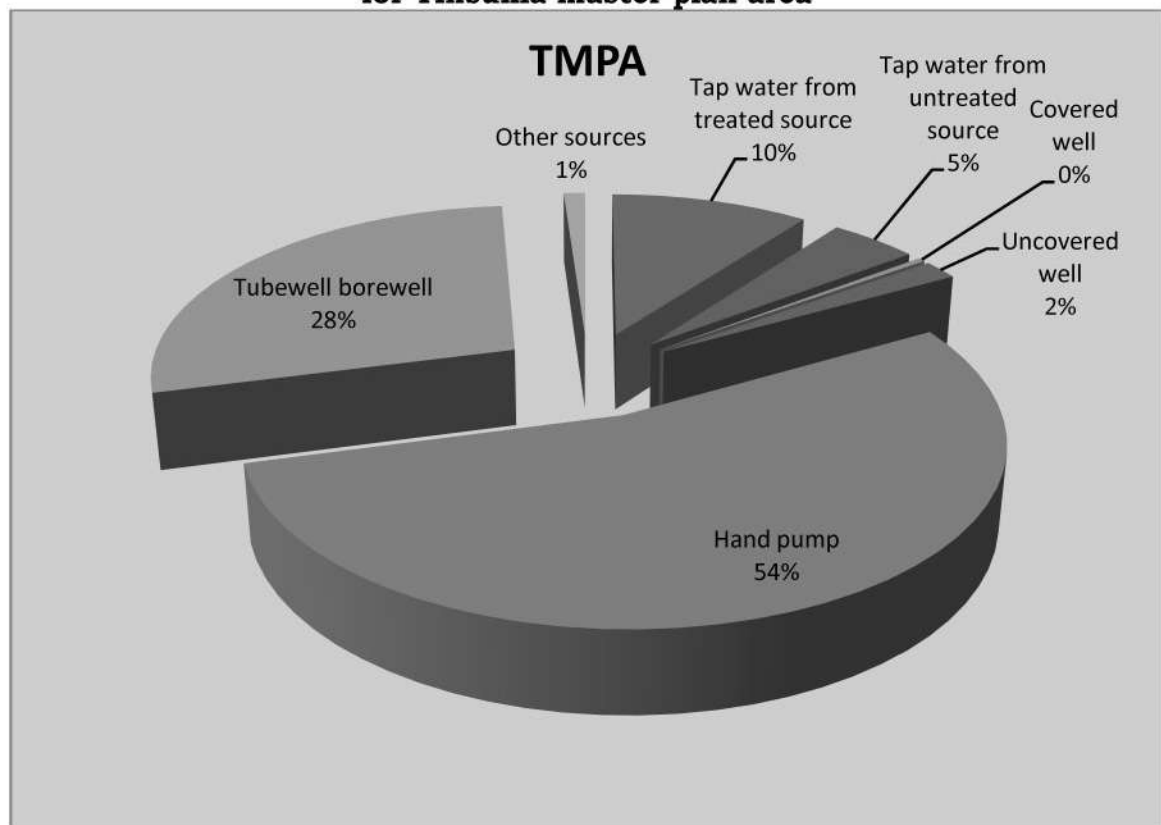


TABLE NO. 24
Number and percentage of households by type of fuel for cooking
in 2011 for Tinsukia Master Plan

Type of fuel	Urban	Percentage	Rural	Percentage	Total	Percentage
Firewood	3908	15.12	14324	79.21	18232	41.50
Crop residue	204	0.79	264	1.46	468	1.07
Cowdung cake	41	0.16	22	0.12	63	0.14
Coal/ignite/ch arcoal	44	0.17	11	0.06	55	0.13
Kerosene	1778	6.88	90	0.5	1868	4.25
LPG/PNG	19513	75.5	3288	18.18	22801	51.90
Electricity	5	0.02	7	0.04	12	0.03
Bio-gas	10	0.04	11	0.06	21	0.05
Any other	86	0.33	2	0.01	88	0.20
No cooking	256	0.99	65	0.36	321	0.73
TOTAL	25845	100	18084	100	43929	100.00

FIGURE NO. 25
Number of households by type of fuel for cooking
in 2011 for Tinsukia Master Plan

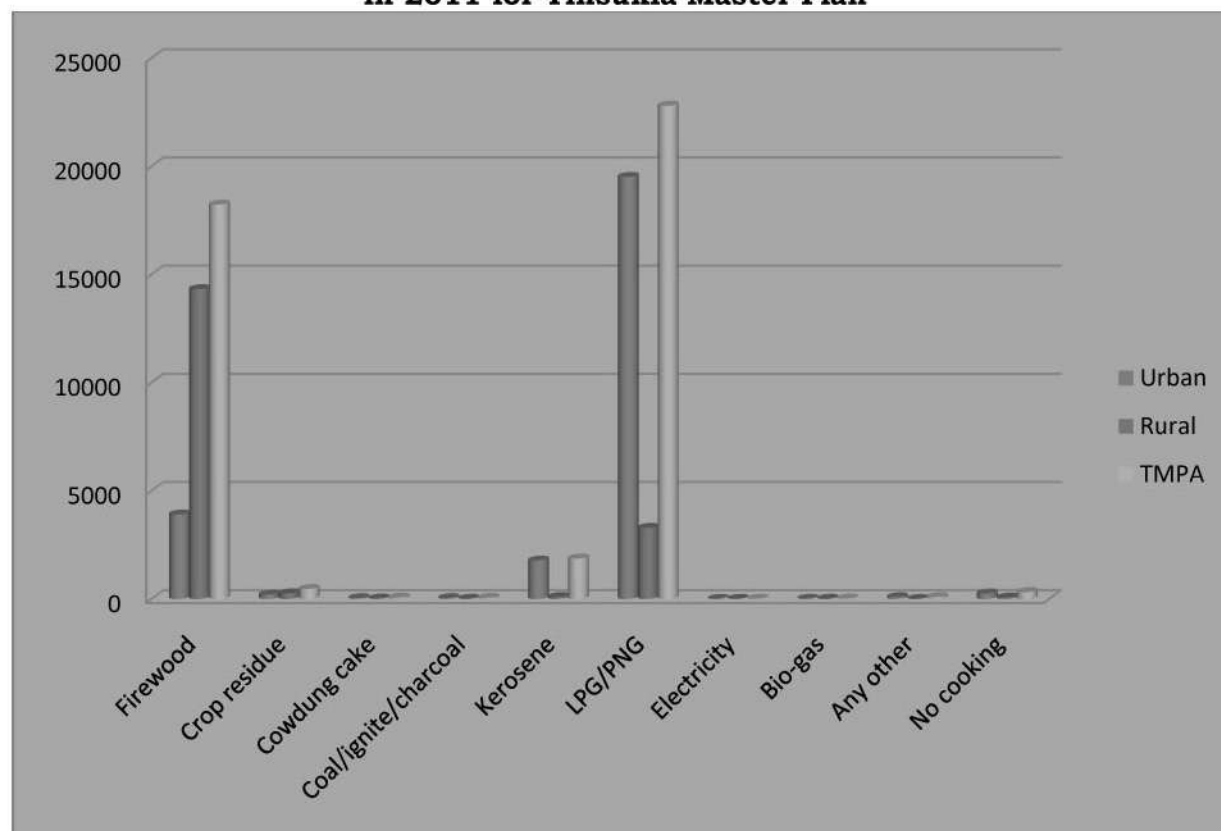


TABLE NO.-25
Number and percentage of households availing banking services and number of households having each of the specified assets in 2011 for Tinsukia Master Plan

Assets	Urban	Percentage	Rural	Percentage	Total	Percentage
Total number of households availing banking services	19461	75.3	8617	47.65	28078	63.92
Radio/Transistor	3949	15.28	2785	15.4	6734	15.33
Television	18319	70.88	7284	40.28	25603	58.28
Computer/Laptop	5314	20.56	1626	8.99	6940	15.80
Landline telephone	964	3.73	327	1.81	1291	2.94
Mobile telephone	18381	71.12	6165	34.09	24546	55.88
Bicycle	15662	60.6	11460	63.07	27122	61.74
Scooter / Motorcycle/ Moped	5546	21.46	1749	9.67	7295	16.61
Car/Jeep/ Van	3107	12.02	655	3.62	3762	8.56
None of the specified assets	1954	7.56	3902	21.58	5856	13.33

FIGURE No-26
Number and percentage of households availing banking services and number of households having each of the specified assets in 2011 for Tinsukia Master Plan

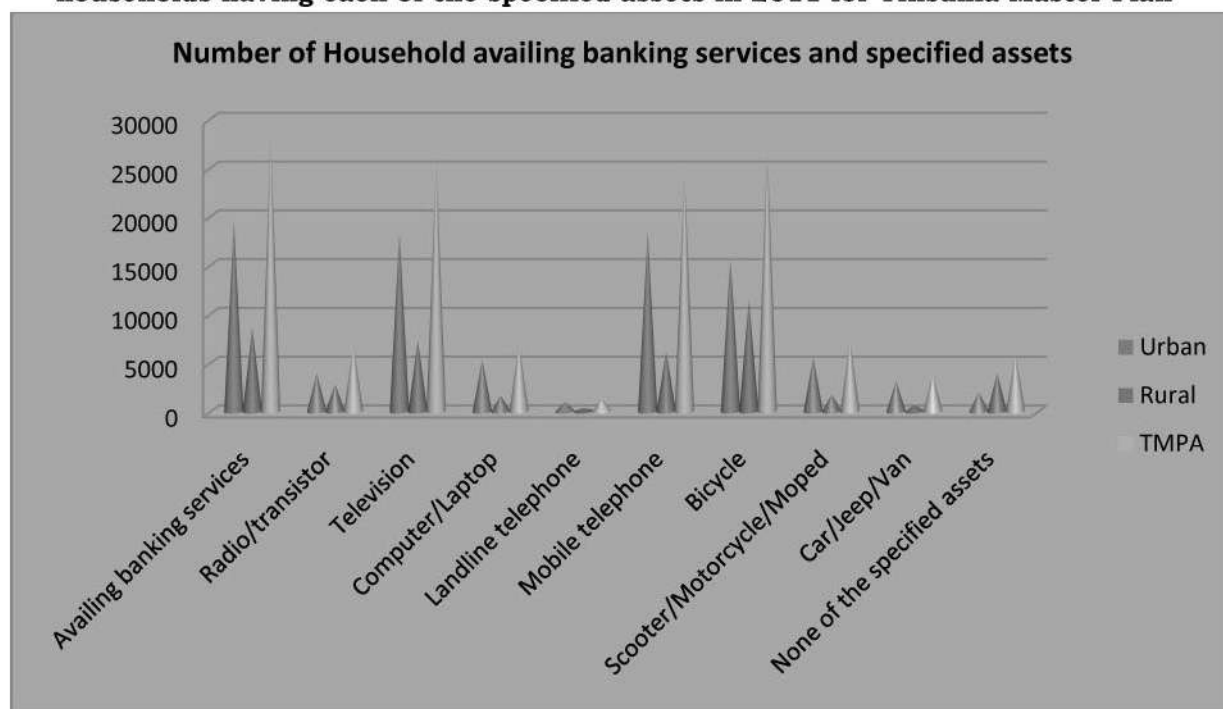


TABLE NO. 26
Number and % of households by type of drainage connectivity
for waste water outlet in 2011 for Tinsukia Master Plan area

Type of Drain	Urban	%	Rural	%	TMPA	%
Closed drainage	4414	17.08	535	2.96	4949	11.27
Open drainage	15308	59.23	5984	33.09	21292	48.47
No drainage	6123	23.69	11565	63.95	17688	40.26
TOTAL	25845	100	18084	100	43929	100.00

FIGURE NO.27
Percentage of households by type of drainage connectivity
for waste water outlet in 2011 for Tinsukia Master Plan area

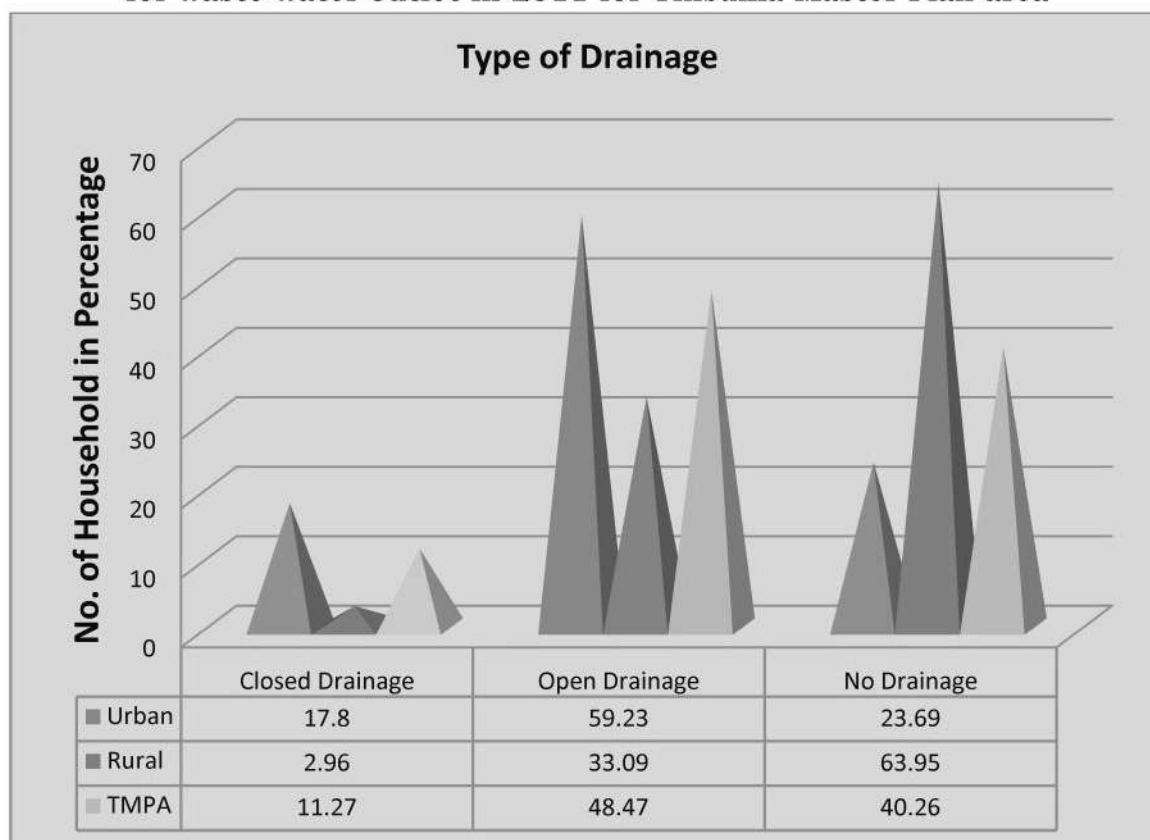


TABLE NO.-27
Number and % of households by availability of kitchen facility in 2011
for Tinsukia Master Plan area

		Urban	Percentage	Rural	Percentage	Total	Percentage
Cooking inside house	Has kitchen	22501	87.06	15321	84.72	37822	86.10
	Doesn't have kitchen	2690	10.41	1616	8.94	4306	9.80
Cooking outside house	Has kitchen	256	0.99	568	3.14	824	1.88
	Doesn't have kitchen	142	0.55	514	2.84	656	1.49
No cooking		256	0.99	65	0.36	321	0.73
TOTAL		25845	100	18084	100	43929	100.00

FIGURE NO.-28
% of households by availability of kitchen facility in 2011
for Tinsukia Master Plan area



4.4 Slums- Squatters and Informal Housing Share

Urbanization can be defined as a process which reveals itself through temporal, spatial and sectoral changes in the demographic, social, economic technological and environmental aspects of life in a given society. Urbanization is a progressive concentration of population in urban unit. Urbanization is a process experienced in economically advanced as well as developing countries, cities and towns as centres of agglomeration, with fast economic growth and tertiary job opportunities. In developing countries the rate of urbanization is very fast and it is not accompanied by industrialization but by the rapid growth of service sector in the economies. During the last three decades, rapid urbanization has been one of the most crucial socio- economic changes of our societies. As population grows more and more, people move into the cities in search of a better life, causing more housing shortage, paucity of civic amenities leading to poverty and in the process creating bigger slums in cities.

But even where urbanization is still low, people are moving to towns and cities. The new arrivals and many long term residents too are crowded together in over populated houses, dismal tenements and teeming slums. With the growth of cities, the cost of housing and infrastructure is increasing on the one hand and lack of affordable housing facility on the other hand. These have often forced the urban poor to rely on or create their own informal infrastructure, giving way to dramatic growth of slums in urban centres.

Urbanization might also force some people to live in slums when it influences land use by transforming agriculture land into other activities and increase the land value. During the process of urbanization, some agriculture land was used for additional urban activities. That is why as urbanization grows slums also grow in India as well as Assam at a faster rate. As an observation, most of the small Indian towns are much congested and unhygienic although their effect on an individual is mitigated by the openness of the environment.

Tinsukia is the main commercial centre, the second to the state capital Guwahati. This town with its various activities attracts people from the various parts of the district and the state.

Because of its economic and administrative importance, the flow of people has been increasing very rapidly in the district, especially to its various urban centres. According to 2011 census, the population in Tinsukia town was 99448. As per information received from Tinsukia Municipal Board, the present slum population of Tinsukia town is 8766 persons with 9 (nine) slum pockets and covering 2132 households.

In Tinsukiatown, the slum pockets are distributed at different types of land, along railway track to marshy land; open field to congested rent house; government land to private ownership land. Rajendra Nagar – the largest slum pocket of Tinsukia town is situated at Ward No. 15. It is observed that 7 (seven) slum pockets of Tinsukia town are located along major road alignments. Sripuria slum pocket is located along New Tinsukia- Guwahati railway line. Similarly, Parbatia slum pocket is situated along the Tinsukia junction- Ledu railway line. In regard to land occupancy, it is seen that

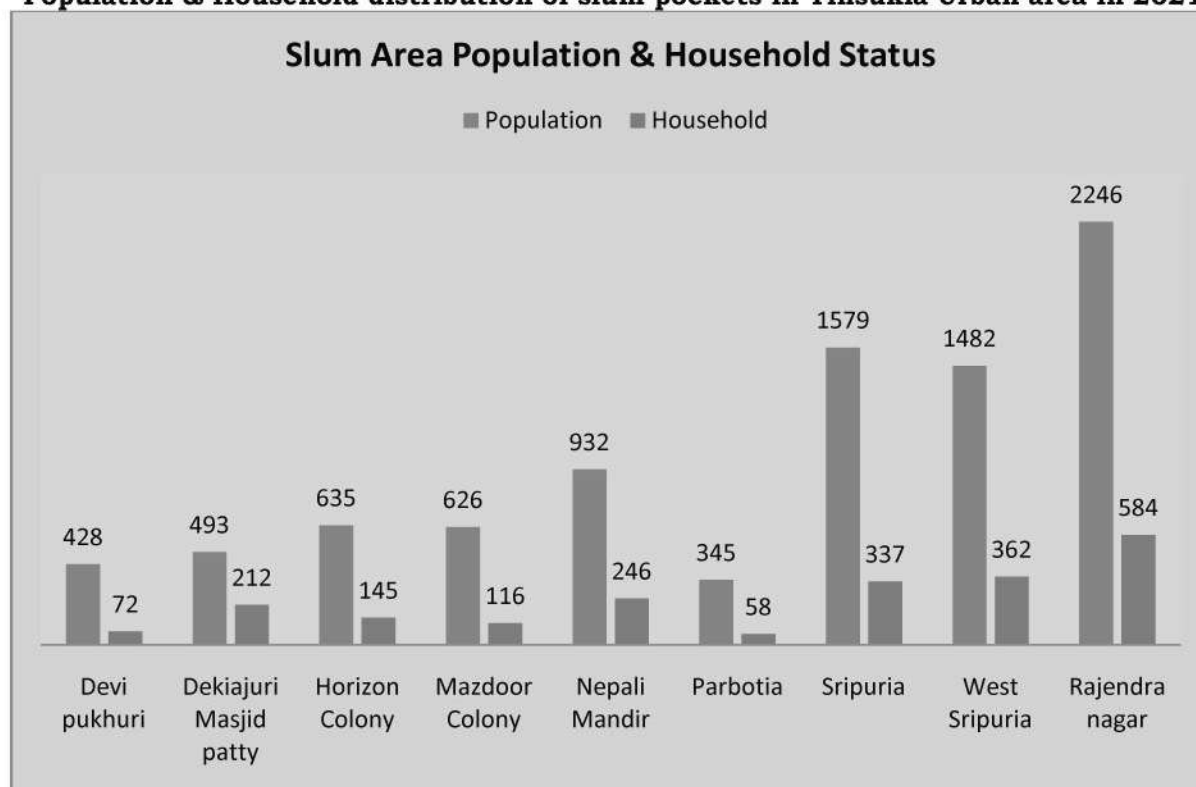
seventy five (75%) percent people live in their private land, twenty (20%) people live in rented houses and only five (5%) percent people have occupied government land. Mazdoor colony and Harizon colony are located at government land only. But in reality it is seen that, although seventy five (75%) slum holders claim owner ship of land where they reside, but land was encroached and occupied. Population and Household distribution of slum pockets in Tinsukia urban area are given below.

Table No-28
Population & Household distribution
of slum pockets in Tinsukia Urban area in 2021.

Sl. No.	Name of Slum area	Ward No.	Household	Population
1	Devi pukhuri	9	72	428
2	Dekiajuri Masjid patty	15	212	493
3	Horizon Colony	15	145	635
4	Mazdoor Colony	15	116	626
5	Nepali Mandir	10	246	932
6	Parbotia	6	58	345
7	Sripuria	2 & 3	337	1579
8	West Sripuria	1	362	1482
9	Rajendra nagar	15	584	2246
			2132	8766

Source: Tinsukia Municipal Board

Figure No.-29
Population & Household distribution of slum pockets in Tinsukia Urban area in 2021



**Sripuria slum****Nepali Mandir slum****Harijon Colony slum**

4.5 Housing Stock, Shortage and Need Assessment

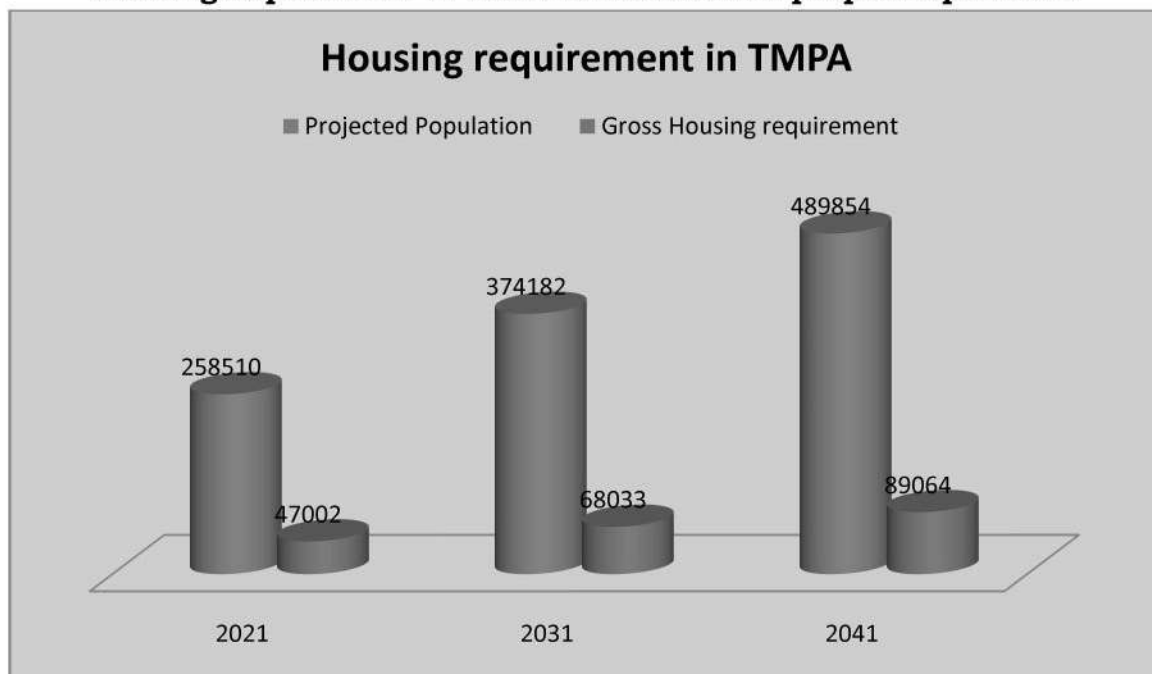
There are about 25845 nos. of houses within urban area and 18084 nos. of houses in rural area of Tinsukia master plan in the year 2011. As a whole in master plan area the number of household are 43929 nos. Out of this approximately 85% houses i.e. 37357 nos. houses are used for residential purposes. Since there are 209411 persons in TMPA in the year 2011 and the above housing figure shows that an average of 5.5 persons per house, housing accommodation is available for 205464 persons and for the remaining 3947 persons additional housing accommodation of 718 nos. are required in the year 2011 itself. The remaining 6589 houses are used for commercial, public & semi-public, institutional and household industry.

To find out the housing requirement for future, a detailed study of family size level of obsolescence, existing shortage etc. are necessary. However, on the basis of projected population and household size of 5.5 persons the gross housing need is assessed below:

TABLE No-29
Housing requirement in TMPA for residential purpose upto 2041

Year	Projected Population	Gross Housing requirement
2021	258510	47002
2031	374182	68033
2041	489854	89064

FIGURE No. -30
Housing requirement in TMPA for residential purpose upto 2041



Since 37357 nos. houses have been used for residential purposes in 2011 in Tinsukia master plan area and the above table reveals that gross housing requirement in the year 2021 was 47002 no. of houses. As such, in the year 2021 itself the additional requirement of housing for the population of 258510 was 9645 including shortage of 718 Nos. of houses in the year 2011.

CHAPTER-5

5 TRANSPORTATION

5.1 Network of Roads

Urban road network is considered as engines of economic growth. A well laid traffic and transportation network not only solves many issues of an urban area but also affects immensely the socio-economic development. The road network system of Tinsukia master plan area is comparatively better than many urban centres of the state. The areas developed under the aegis of Tinsukia Development Authority (TDA) follows a specific grid pattern of transportation network. These areas are not severely affected by urban flooding, traffic congestion, low air quality, etc. In some core areas of the town the right of way of road is not sufficient and well equipped to take the ever increasing traffic load. Further, the existing railway level-crossings at the town area always create traffic havoc leading to national economic loss. **As such, Tinsukia need a system that addresses the problems of severe congestion, deteriorating air quality, energy sustainability and increasing number of road accidents.**

For smooth traffic movement in Tinsukia master plan area the plan provides 502.88 hectare of land, which constitute 3.85 % of the master plan area or 6.96% of the total developed area for circulation purposes. After closely perusing the factors responsible for mobility, trip length, existing land use pattern, emphasis has been given on the following aspects for effective traffic and transportation system in Tinsukia master plan area.

- (i) Optimum use of the existing transportation system through improved traffic management plan including one way, no way, no stopping, no parking plan etc.
- (ii) Improvement of the existing road network through strengthening and providing street furniture, widening as per IRC guideline.
- (iii) Provision to create additional off-street parking/multi-storied parking facilities.
- (iv) Development of new roads, logistic hub and an introduction of eco-friendly public vehicle with an objective to reduce private cars on the roads.
- (v) Provision of flyover, traffic rotary and island etc.

5.2 Overview of Critical Roads and Improvement

Tinsukia is well connected with the rest of the country by roads, railways and airways. The Mohanbari airport is 30 Km away from Tinsukia town. Beside taxis, ASTC and private buses, winger and trucks are playing a major role in transporting passengers and goods to and from Tinsukia to all over Assam as well as to the different states of India. The table below gives details of critical and other roads responsible for mobility and socio-economic development.

TABLE NO:-30
Category Of Roads

Category of roads	Nature of roads (C-critical)	Name	Existing Width	Remarks
Major		AT road / NH.15 (new)	Avg 50' within the town and varies from 60'-70' outside the town area	There is no scope for widening in the town area due to existence of railway track in one side.
	C	Tinsukia Makum By-Pass road	150'	
		Jail road	25' to 28" (51' in front of Jail road)	40'-50'
	C	Rangagarah road	Avg 60'	Immediate widening with road furniture is required as it is the vital link connecting the town with Makum-Tinsukia Bypass. Widening is possible.
	C	Gelapukhuri road	Avg 35'	Widening is essential as it carries huge traffic due to its direct link with bypass, plastic park, reserve forest etc. Widening through land acquisition is possible.
	C	G N B road	Avg 45'	Life line of the town. Widening is not possible. Strict enforcement of traffic management plan is highly recommended.
		L B T road (Napukhuri Tingrai road)	50'	
Arterial		VIP road	31'to 42'	Widening upto 45' with covered drain on both sides is recommended. Widening is possible.
	C	Tamulbari or S Dohutia road	Varies from 40' to 25'	
	C	Banshidhar and Khageswar road	Varies from 25' to 20'	Very important road. One way traffic is recommended.
	C	Subhasini road	Varies from 20' to 40'	Very important road. Immediate upgradation through widening and both side covered drain is required. Traffic

				generating, business establishment should be prohibited on the road.
		Dohutia chuk road	Avg 30'	
		Bishnu rabha road and Jyoti Prasad Agarwala road	Avg 34'	
	C	Devi-pukhuri road	Avg 34'	Highly congested. Vendors may be allowed in one side of the road. Both side drainage with footpath and one way traffic is recommended.
	C	Senairam Lohia road/SBI road	33'	Highly congested, One way traffic and parking in one side is recommended.
	C	Chirwapatty road	Avg 35'	Upgradation with drain on both side is recommended.
		Juria Namghar road	30'	
		Raja ali road	30'	Upgradation with drain on both side is recommended.
		Lohari kachari road	25'to 30'	
		Jyoti nagar road (Napukhuri)	65'	
	C	Parbotia road	Avg 30'	Development of road with covered drain and strict traffic management plan to channelize traffic is recommended.
Sub-Arterial		Manik Hazarika road	Avg 22'	
		Tulsiram road	Avg 30'	
		Parbotia namghar road		
		IT office road	Avg 40'	
		Bengali Girls High School road	22'	
		Chatteswari Kalibari road	30'	
		Congress Colony road	35'	
		Meher Kalibari road	27'	
		Railway colony road	Avg 30'	

	Banshidhar road	25'	
	Khageswar road	20' to 25'	
	Nabibullah road	29' to 32'	Upgradation with both side drainage and one way traffic is recommended.

Tinsukia have connected by roadways with other places as shown below: -

- a) Tinsukia to Guwahati via NH-15, NH-2, NH-715, NH-127 & NH-27 (day and night service)
- b) Tinsukia to Dibrugarh via NH-15
- c) Tinsukia to Digboi, Margherita via Makum through NH-15 and NH-315
- d) Tinsukia to Bordubi, Duliajan via NH-315A
- e) Tinsukia to Doomdooma, Talap, Chapakhowa via NH-15 and NH-115
- f) Tinsukia to Namsai via Kakopothar via NH-15
- g) Tinsukia to Roing via Chapakhowa via NH-15 & NH-115
- h) Tinsukia to Dhemaji, Lakhimpur via NH-15
- i) Tinsukia to Itanagar via NH-15, NH-713A and NH-415
- j) Tinsukia to Junai and Pasighat via NH-515

The utility of slow moving vehicles is universally accepted. For short distance trips of man and material slow moving vehicles like rickshaw, hand cart, etc. are considered as convenient mode of transport. These physically driven mode of transport are pollution-free also.

TABLE No-31
List of various slow moving carts in Tinsukia Municipal area

Sl.No	Category	Number
1	Rickshaw	595
2	Hand Cart	500
3	Mobile Shop	169
4	Milk man	45

Source: Tinsukia Municipal Board

TABLE NO-32
Number of Motor vehicles registered (Progressive) in Tinsukia district upto 2019-20

Multi-Axle Vehicle	39
Articulated Vehicle	279
Medium vehicle	727
Heavy vehicle	5165
Four wheelers	12380
Three wheelers	2252
Stage carriage	98
Contract carriage	706
Omni buses	39
Mini buses	116
School buses	60
AATT	143
Motor cabs	108
Maxi cabs	578
Other Taxi	2411
Auto Rickshaw	3900
Two wheeler	143233
Private car	45635
Tractor	1740
Trailer	2134
Crane	164
Govt. Vehicle	122
Firebrigade	24
Ambulance	323
E-Rickshaw	597
Others	100
Total	223082

Source: Statistical Handbook, Assam 2020

5.3 Bus Transport Terminals

Existing Tinsukia master plan area has 2(two) bus terminals viz. (1) TDA bus terminus at Na Pukhuri covering an area of approx. 5 Bighas (1.66 acres) where 45 buses can be parked at a time (2) ASTC bus stand adjacent to NH-15 (AT road) near Escape Police Point. TDA bus terminus provides services to the buses operated by the private owners and ASTC bus stand for govt. and under ASTC operated buses.

Generally public buses stop on road in front of ASTC bus station instead of notified stopping place creating heavy traffic congestion all along the day. Further, bus stoppage near Tinkunia pukhuri and in front of Treasury office, Tinsukia at NH-15 (AT road) also create traffic congestion thereby affecting the overall mobility and economy of the public.



Tinsukia ASTC bus stand

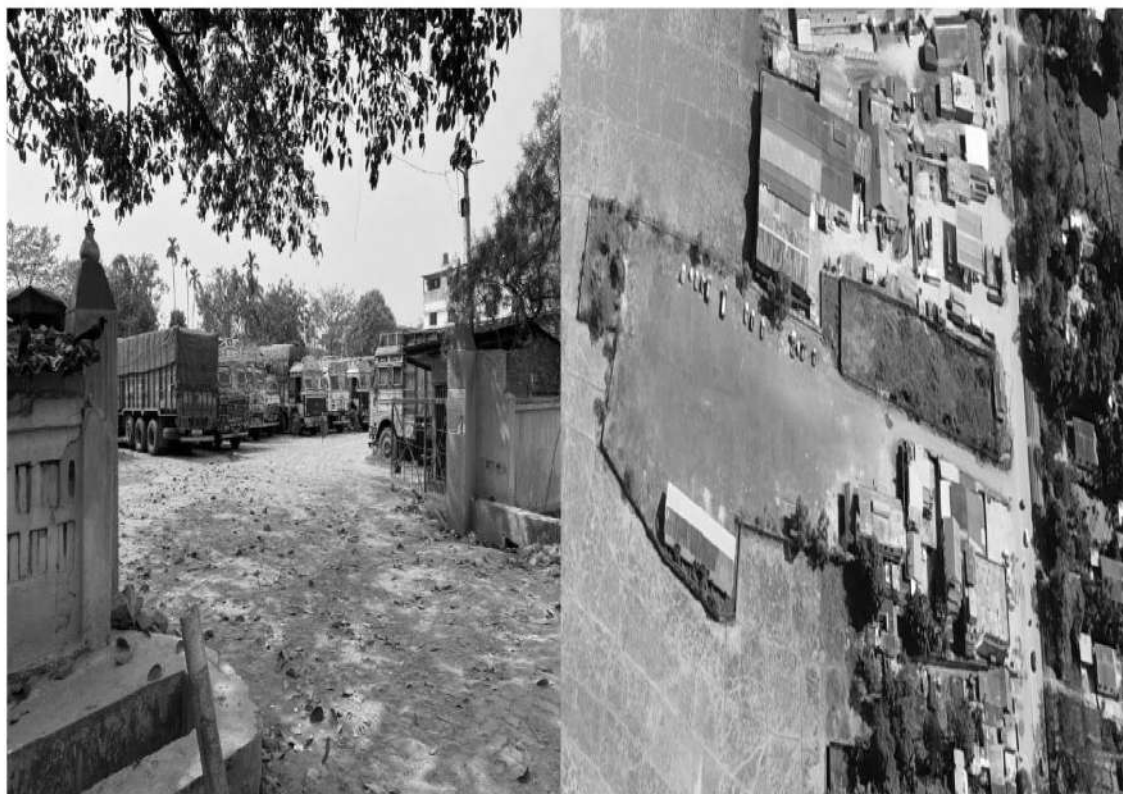
The surface condition of the major town roads like AT road, GNB road, Rangagora road don't remains satisfactory throughout the year due to ever increasing traffic. Further, movement of big size buses and trucks also make not only traffic congestion, but also prone to traffic accidents. The roads are incapable of taking additional traffic load.

Keeping in view of the above, **the plan recommends to shift the existing A.S.T.C. bus station from present side at AT road / NH-15.**

5.4 Freight Zones Logistics

Logistic zones are a grouping of activities related to freight distribution such as distribution centres, transportation and supporting services within a defined and often planned area. Logistics tend to agglomerate at specific locations, mainly because of the accessibility they confer, the availability of land, as well as the benefits logistics activities derive from being close to one another. There is a wide array benefits derived from improved logistics capabilities, such as increased integration of trade and supply chains, better utilization of transport assets, more competitiveness and employment opportunities.

Presently there is only 1 (one) partially functional truck terminus at Laipuli, Tinsukia built by Tinsukia Development Authority covering an area of 10 Bighas and can accommodate 100 trucks at a time at Laipuli by the side of AT road / NH-15. However, most of the trucks are parked at 2 (two) non-notified private stations, **viz. Yadav Truck stand and Shukla Truck stand near Tamulbari field.** During land-use survey it was observed that these private truck stations donot have addequete facilities and creates great inconvenience to the public. Further, planning principles does not encourage truck stations at busy commercial area. As such, the plan recommends immediate closure / shift of these private truck stations to the out-skirts of the town or to the TDA Truck terminus. It is also observed that a large numbers of trucks are parked from New-Tinsukia Railway junction upto Tinkunia Pukhuri on AT road (NH-15) at night endangering life and property of general public.



Yadav Truck station TDA Truck terminus

A large number of private godowns are situated near the ASTC bus station area in a congested manner and at Siding Bazar which are prone to fire-hazards. **This plan suggest to shift the godowns to the outskirts at the logistic hubs proposed at Tinsukia Makum Bypass.**



Private godowns

5.5 Footpaths & Bicycle Tracks

Footpaths are normally designed for pedestrian for pleasant and comfortable walking. For a short distance movement, a good number of people prefer to either walk or ride a bicycle. These two means of transportation share a major portion of educational trip, work and interzonal trip etc. Footpath provided for pedestrians are either heavily encroached or remain unused as non can take the risk of walking along the footpaths with uncovered manholes and having different levels. The barrier-free environment is a distant dream. This compels the pedestrians to use the same carriage-way with other modes of transport, thereby reducing the effective carriage-way which ultimately reduces travel speed and creates traffic jam that pollutes the environment.



No footpath/encroachment

There is no notified cycle track in the town due to inadequate right of way of the existing road network. Exclusive lane for slow moving vehicles, pedestrians along with spaces for street vendors are also essential for overall development of a town. The hawkers and street vendors also play an important role in urban economy. The notification of vending and no vending zone by the authority is mandatory as per the provisions of the Street Vendors Act, 2014. This improves the capacity of the lanes designed for motorized vehicles and increases the safety of slow moving vehicles and pedestrians

The plan suggests construction of barrier-free footpath in both sides of all the roads in the town by the concerned authority to use as a walking track. The plan earmarks cycle track in Makum Bypass road and at the proposed Green-belt zone. The loop starting from Boroguri Tiniali to Rongagora road passing in front of DC office, Sarbananda Singha Stadium can be used as notified walking track.



Proposed cycle track area

The width of footpath as per URDPFI guidelines is follows:

TABLE NO:-33
Width of Footpath

Sl. no	Description	Width(mtr)
1	Minimum free walkway width in residential/mixed use areas	1.8
2	Commercial/Mixed Use Areas	2.5

The URDPFI Guideline for cycle /NMT track are given in the following table:

TABLE NO:- 34
Cycle Track

Sl. No.	Arterial Roads	SUB Arterial Roads	Distributary Road	Access Roads
Non-Motorized Vehicle	Segregated cycle track	Segregated cycle track	Cycle lane	Mixed/traffic
Location	Between carriageway or street parking and footpath on either edge of the carriageway	Between carriageway or street parking and footpath on either edge of the carriageway	On the edge of the carriage ,adjacent to the footpath or parking	Not applicable
Gradient	1:12-1:20	1:12-1:20	1:12-1:20	1:12-1:20
Lane width	2.2 to 5.0m	2.2 to 5.0m	2.2 to 5.0m	Mixed with motorized vehicular traffic
Minimum width	2.5 for a two lane cycle track and 1.9m for a common cycle track and footpath	2.0 for a two lane cycle track and 1.7m for a common cycle track and footpath	1.5m	1m(painted)

5.6 Parking

At present, there are 2 (two) organized offsite parking space in the town. One is located near old Tinsukia Railway station and other one is the area where old Duk Bungalow standing. On street parking dominates urban area of Tinsukia. The roads are already overcrowded with mixed-traffic and further encroachment on road surface for parking by cars and two wheelers has resulted into heavy traffic congestion all along NH-15 from Hijuguri area to ASTC bus station. Traffic congestion also takes

place in Devi-Pukhuri road, Rangagora and GNB road due to on-street parking and encroachment by street vendors. **During land-use survey it was observed that the office compound of Joint Director Health Services, Tinsukia situated near Thana-Chariali is also used as parking place by few commuters due to lack of adequate parking space.**



Offstreet Parking at old Rly station



NH-15



On-street parking GNB Road



Offstreet parking at Duk Bungalow



Mixed traffic at AT road

The recommended equivalent car space (ECS) required for different type of vehicles as per **URDPFI** guidelines are given in the following table for design of parking areas

TABLE NO:-35
Parking Space

Sl. no	Vehicle type	ECS
1	Car /taxi	1.00
2	Two Wheeler	0.25
3	Auto Rickshaw	0.50
4	Bicycle	0.10
5	Trucks/Buses	2.5
6	Emergency Vehicles	2.5
7	Rickshaw	0.8

5.7 Areas with Major Traffic Congestion and Parking Issue, Accident Prone Area

The maximum inter-town traffic is generated on the AT road / NH-15 starting from New-Tinsukia railway junction and continues upto Shiv Dham. This is the most vital link for the town. The other important inter town traffic generating road is GNB road, LBT road, from Rail-crossing at A.T.road up to Cold storage at Na Pukhuri area , Rangagora, Subhasini road, Gelapukhuri road, Devi-Pukhuri road etc.

The presence of mixed traffic on narrow roads has accelerated traffic congestion. The AT road/NH-15, GNB road, Gelapukhuri road, Rangagora road, Devi-Pukhuri road have become highly accident prone over the years. Another accident prone area is near the Railway crossing of Tinsukia-Duliajan road. Comprehensive traffic management plan with installation of road signage and marking in these areas is the need of the hour.

5.8 Improvement of Rotary and Junctions

Improvement of all road junctions as per IRC guidelines is a requirement. **The plan recommends a Rotary at a junction of Gelapukhuri road with Tinsukia Makum-Bypass and a traffic island at the junction of Tinsukia Makum Bypass with Dhelakhat tea estate road. The plan also recommends traffic island at the T-junction of Tamulbari and AT road.**

5.9 Street Lighting and Proposed Improvement Plan

The town is illuminated by Tinsukia municipality with 29 nos. High mast lights, 4240 nos. of Led street lights for the convenience of the people.

5.10 Signage : Availability and Requirement

The ULB, traffic and other concerned departments will assess the requirement of Signage and accordingly install the signage as per the rules and regulations for the beautification of the town as well as smooth flow of traffic and public convenience.

5.11 Major Proposals

- I. A comprehensive traffic and transportation management plan including Vending zone, Zebra-crossing etc. A few roads requires enforcement of no-stoppage, no-parking proposal.
- II. One freight zone logistic centre cum hub at the present TDA truck terminus extending it upto Tinsukia Makum Bypass and shifting all private truck stations to this hub.
- III. Shifting of the present ASTC bus station to the proposed ISBT (Inter State Bus Terminus) at Makum Bypass road near the junction of Makum Bypass and Rongagora road.
- IV. Four Nos. of flyover at (i) Railway over-bridge at the junction of AT road and Tinsukia Makum Bypass, (ii) Road junction of Tinsukia-Makum Bypass and Guijan road, (iii) Railway over-bridge from Tinsukia Makum Bypass to Tinsukia Medical College, (iv) Escape point Chariali.
- V. Shifting of the existing private godowns from the heart of the town to the proposed logistic hub at Makum bypass.
- VI. Cycle Track at Tinsukia-Makum Bypass road and walking track at the loop strating from Boroguri Tiniali to Rongagora road passing in front of DC office, Sarbananda Singha Stadium.
- VII. Introduction of eco-friendly public transport to avoid use of private cars.
- VIII. Widening of Rongagora road with traffic islands at all T-junctions.
- IX. Widening of a few vital roads in the southern side of master plan for equal development on both sides, better connectivity, ease of movement and sustainable development. Roads are marked in the Circulation plan.
- X. Considering the scenic beauty of the town, the plan recommends plantation along the major roads and development of traffic points to augment the aesthetic beauty of the town.

CHAPTER 6**6. INFRASTRUCTURE, PUBLIC UTILITY & SERVICES****6.1 Physical Infrastructure****6.1.1 Water Supply**

The objective of a public protected water supply system is to supply safe and clean water in adequate quantity, conveniently and as economically as possible. Rising demand of water due to rapid urbanization is putting enormous stress while planning the water supply system for an area; it is evident to consider water conservation aspects, which may be possible through optimal use of available water resources, prevention and control of water and effective demand management.

Tinsukia town does not have public pipe running water supply system. The residents are dependent on ground water which is easily available. However, at present a Water Supply project under NLCPR is going on covering Tinsukia Municipal Board and its adjoining out growth areas. The project is designed for the period of 30 years i.e. for the year 2016- 2046. Total quantity of water to be supplied daily and total demand for the project area at intermediate stage i.e. upto 2031 is 12.0 MLD. Considering the topography the whole area is divided into 8 nos. of service zone, and their respective water demands are listed below:-

TABLE NO-36
Service Zone and Water Demands

Sl.No.	Zone	MLD
1	Zone- I	1.19 MLD
2	Zone- II	1.47 MLD
3	Zone- III	1.61 MLD
4	Zone- IV	1.75 MLD
5	Zone-V	1.61 MLD
6	Zone- VI	1.68 MLD
7	Zone- VII	1.34 MLD
8	Zone- VIII	1.35 MLD

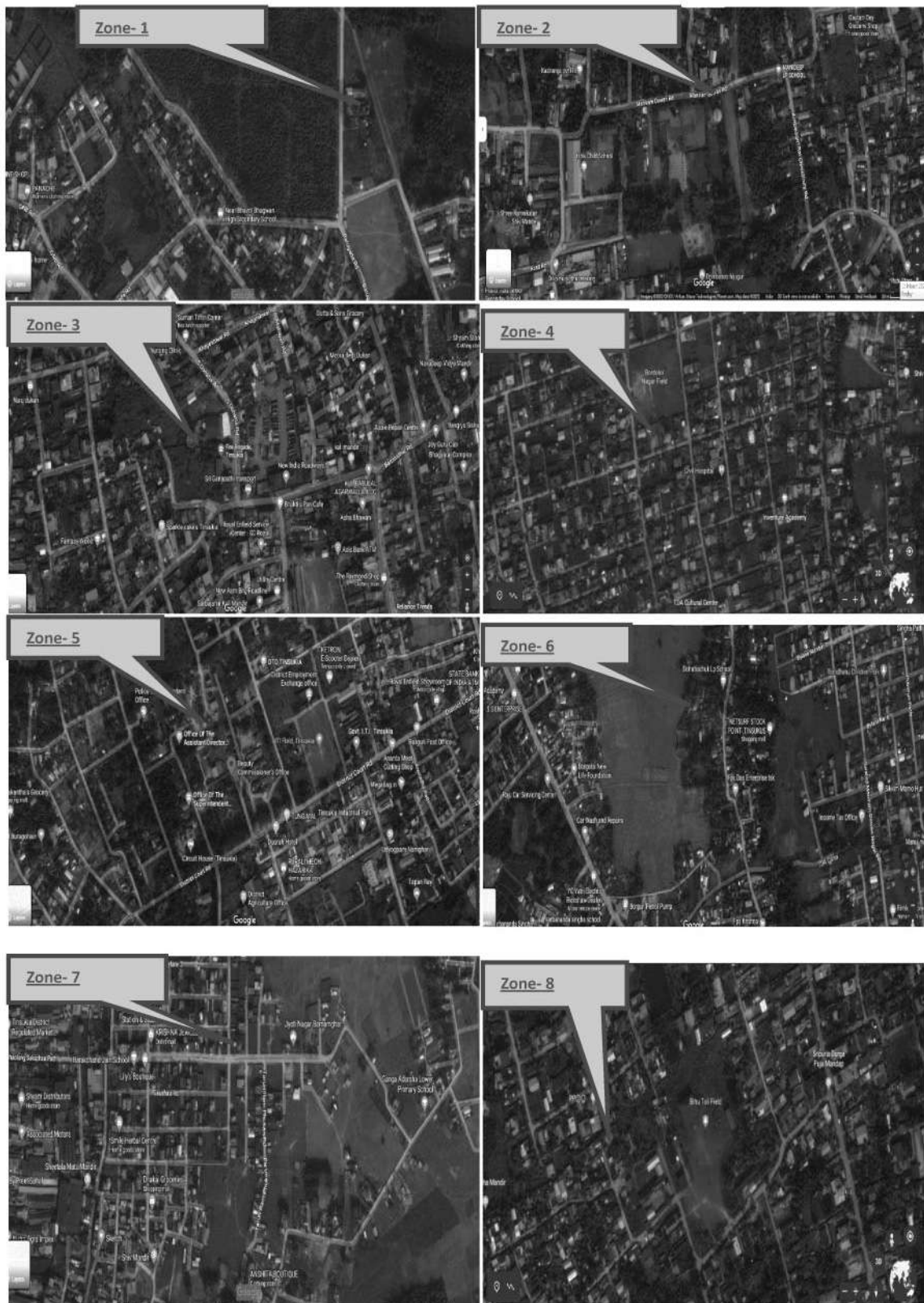
Source:- Regional Director, Civil Engineering (P) Ltd, Guwahati

Water source for the project is River Dinjan (Dibru) situated at a distance of 10 Km from its treatment plant. Since source of water for the proposed project is surface water to be tapped from river, treatment process having facilitates for- Coagulation- Flocculation- Filtration, followed by disinfection is proposed at a treatment plant situated near DC office, Tinsukia. The treated water will be supplied to various Elevated Service Reservoir (ESR) installed at the following locations.

TABLE NO-37
Location of Elevated Service Reservoir (ESR)

Sl.No.	Zone	Capacity of ESR (Cum)	Capacity of CWR (Cum)	Locations
1	Zone- I	300	100	Near Parbatia
2	Zone- II	380	110	Near Donbosco School (VIP Road)
3	Zone- III	430	110	Near Tamulbari
4	Zone- IV	450	140	Near Bordoloi Nagar
5	Zone-V	430	110	Behind DC Office
6	Zone- VI	450	110	Near Dohutia Chuk
7	Zone- VII	340	110	Near Jyoti Nagar
8	Zone- VIII	340	110	Near Sripuria

Source:- Regional Director, Civil Engineering (P) Ltd, Guwahati



Earlier, the rural areas of Tinsukia master plan is served by 3 (three) small scale water supply schemes as shown below.

1. Dhekiajuri Piped Water Supply Scheme at Sripuria-Baruahula Road, Tinsukia



2. Lohari kachari water supply



3. Barguri Water Supply Scheme at Borguri-Ukonimuria, Borguri, Tinsukia



For the rest of the town and rural areas, the only source of water is tube well and the ring wells as ground water and surface water is readily available at Tinsukia and its adjoining areas. Though the tube well and ring well are efficiently functioning, it will no longer be considered as free from contamination due to presence of a number of pit latrines.

At present, under the flagship programme of Jal Jeevan Mission, all the villages which falls under gaon panchayat areas and tea garden areas will be provided with water tap connections. Every household will be able to get tap water connections from nearby piped water supply schemes. Moreover, it will

provide tap connections to schools, Anganwadi centres, GP buildings, health centres, wellness centres, community buildings and any other public institutions also. The scheme under Jal Jeevan Mission are designed technically keeping in view that every person will be able to get at least 55 litres of water per day. Under the mission, pure water will be provided by retrofitting the old schemes or by establishing new piped water supply schemes in the villages or in the tea gardens.



URDPFI Guideline's for Water Requirement

As per URDPFI guidelines the norms for water requirement for institutional buildings are given below:-

TABLE NO-38
Requirement For Institutional Buildings

Sl.No	Institutions	Litres per head per day
1	Hospitals (including laundry)	
	No. of beds exceeding 100	450 (per bed)
	No. of beds not exceeding 1000	350 (per bed)
2	Hotels	180 (per bed)
3	Hostels	135
4	Boarding Schools	135
5	Restaurants	70 (per seat)
6	Day school / colleges	45
7	Offices	45
8	Cinema, concert halls and theatre	45

In addition to the above the fire- fighting water demand is also as a function of population. It is desirable that one-third of water of fire fighting requirements is to be provided from the service storage of State Fire service department. The balance requirement may be filled up from the storage tanks located at strategic points. **At present, there are 4(four) deep tubewells located at Modi Lohia road (New market), Devi Mandir (Chirawapatty road), DM Lohia road and at TDA lake, Bordoloi nagar to assist the fire service department.**

6.1.2 Drainage System

The Tinsukia master plan area is governed by 2 (two) drainage basins viz. Dibru and Tingrai basin. The Dibru basin consists of the area situated on the North side of AT road / NH-15 and Tingrai basin is situated in the Southern side of AT road / NH-15 respectively. The river Dibru has got no direct link with the run-off TMPA but the run-off from this area is fed by the rivulet Dinjan which originates from the master plan area.

The drainage system in Tinsukia municipal area is relatively good as compared to rural areas. Most of the water in the town drains out by the Tinsukia Development Authority Drain (TDA Drain). The existing natural drains of master plan area are not properly defined and are slowly being encroached by the growing population. The existing drainage of these areas does not have a proper slope resulting in water logging at different areas during rainy season. Most of the drains in rural areas of master plan are kutchra drains and not link up with natural channels and also do not have sufficient cross section to drain out surface water after heavy shower.

The Tingrai river is flowing in the southern portion of TMPA. At present there is no well defined channel along the Guwahati-Tinsukia railway line which is also in a very dilapidated condition. There is another small drain running from the NH-15 to the river Tingrai on the western side of Tinsukia railway station.

The existing 2 (two) outlet channels meant for carrying run-off from urban area, insufficient in section and grade. One of the channel starts from the AOC installations to Tingrai and the other by the side of the Railway area starting from the Railway culvert situated in Hijuguri area. Further, the storm water from the south-east portion of master plan area situated on the southern side of Railway line is carried out by another eastern drain developed by TDA. This drain starts from the culvert situated below railway track passes under the Napukhuri Overbridge. Napukhuri residential area and ultimately joins Tingrai River. However, it was observed during physical survey that distant area of South-East portion has no direct linkage to this drain resulting into erection of water logged areas. This plan recommends urgent steps to provide drainage system connecting TDA drain failing which situation may turn from bad to worse.

As regards, the run-off pertaining to the Northern part, most of them are carried through road side earthen drains to the earthen channel. The TDA drain which starts from the Subhasini area to Janamukh where from these are carried through rivulet to river Dibru. A part of the flow, that is from the area bounded by Shivdham, GNB road and Gelapukhuri road are supposed to be carried through an earthen channel flowing from the rear side of the Parbatia area towards the rear side of the College area and then the flow is

dissipated through over land over the paddy fields and Hollas (low lying areas) to ultimately discharge at Khanamukh to be carried by rivulet Dinjan. But due to the negated grade as well as due to the blockage of the section in some parts, the run-off gets stagnated in swamp area near Shivdham and during heavy rain, the rain water gets way into the industrial compounds situated nearby. The rivulet Nagurijan plays no role in draining water from the Tinsukia area; however, it serves as the main outlet channel for the run-off from the tea gardens like Hukanpukhuri, Kachujan situated in the master plan boundary on the north-eastern side of the town.

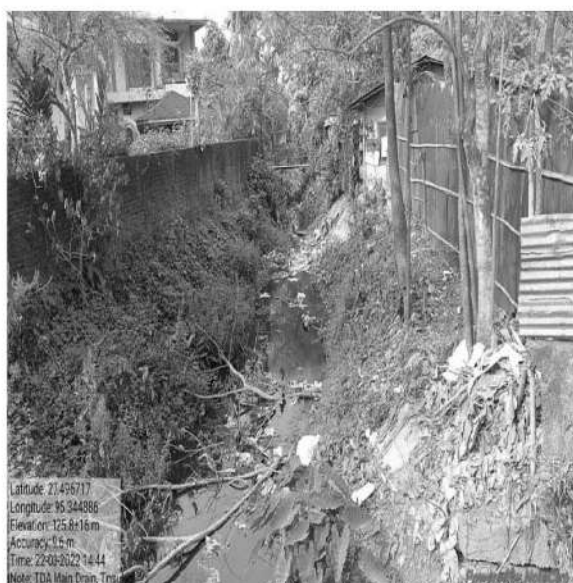
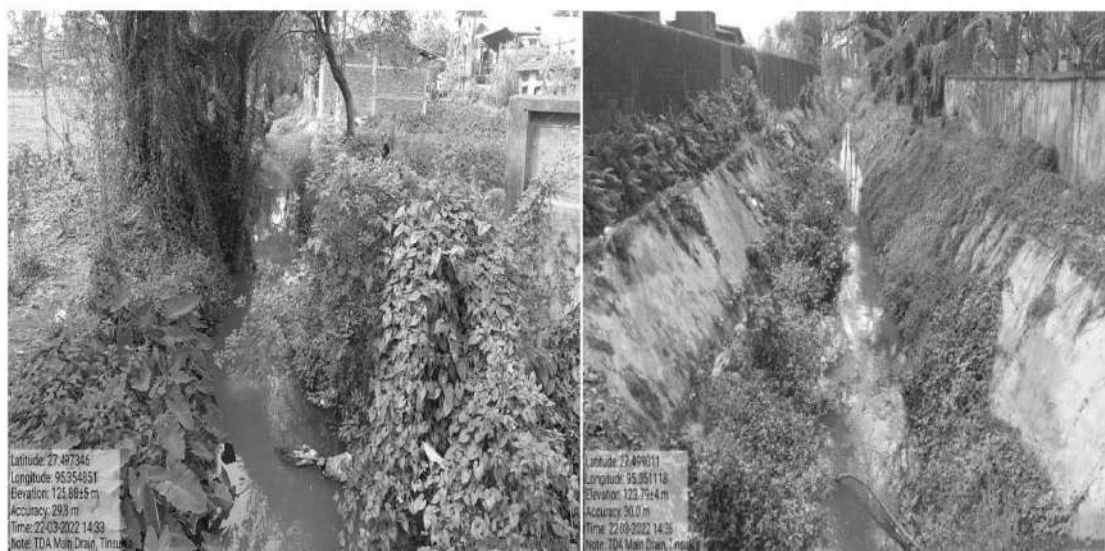


Tingrai river

As such, it is an urgent necessity of Tinsukia Municipal Board and concerned authorities to construct a few drains at certain locations of the town and in rural areas to drain out storm water. It is also important on the part of TMB for the development of the existing natural stream which is running through the town for removing the water logging problem in the town as well as in residential areas. The existing infrastructure conditions of the town reveals that the priority of the town is an efficient storm water drainage system where by storm water that accumulates within the populous localities and commercial areas are drained out through scientifically designed storm water drainage system. This plan also recommends hierarchy of drainage system for the entire master plan area because almost 40.26% households in the master plan area still not connected with the drainage system. Considering the above, Drainage & Sewerage Division, Town & Country Planning, Assam prepared a Drainage master plan for Tinsukia to solve the problem of storm water and water-logging in the town and its adjoining areas. The said drainage master plan is already submitted to the Govt. and may be considered to be a part of this master plan. However, the said drainage master plan covers the existing master plan area which is 52.56 Sq. Km.

Tinsukia Municipality has already taken the following measures for improvement of existing drainage facility at Tinsukia town. (a) Provision of concrete drains along the selected residential areas of the town. (b) Re-sectioning of existing natural channel as per requirement. (c) Provision of footpath, culvert etc. as per requirement.

The above provisions are expected to remove prevailing problems of water logging and minimize disruption of day-to-day activities as well as add to overall cleanliness of the town. Improvement of present drainage provision will lead to longer life of roads remitting increase accessibility of vehicles; provide better connectivity within the towns with better road safety and better pedestrian movement. Chances of ground water contamination will also reduce to a great extent besides help in removal of mosquito breeding grounds.



Drainage

6.1.3 Sanitation

In Tinsukia urban area almost 79.41% household use septic tank. In the master plan area as a whole the percentage of households use septic tank are 57.23%. In the master plan area, almost 22.86% household use pit which are not conducive for health and environment. This type of condition is prevailed in all over India. There are 5 (five) public toilets in Tinsukia municipal area viz. Rangagora road, Thana road, Daily fish market, Sunday hut and SKF point over-bridge.



As such, The Government of India in the year 2014 introduced the Swachh Bharat Mission (SBM) which is being implemented by the Ministry of Urban development and Ministry of Drinking and sanitation for urban and rural areas respectively. The main objective of the mission is – Elimination of open defecation, Eradication of manual scavenging, Modern and scientific Municipal Solid Waste Management, to effect behavioural changed regarding healthy sanitation practices, generate awareness about sanitation and its linkage with public health, capacity Augmentation for ULB's.

Swachh Bharat Mission (SBM) will improve the health conditions of every Indians. This practice will be able to prevent many types of diseases in the country and we will be able to have a happy and healthy society. SBM can be able to build a better eco-friendly environment in the country and can give better life to our upcoming generations.

SBM will also help in generating employment through tourism and boost India's Gross Domestic Product (GDP).

Unhygienic condition's is one of the major root courses of diseases/illness. Any disease or illness has financial impact both in terms of expenditure and potential revenue earning. As such, SBM will have positive impact on India's health care sector. SBM will plug the loss due to unhygienic and lacks of cleanliness and will help to case burden on existing health care facilities.

SBM will lead to Health India which in turn increases productivity of Indians. High productivity means high earning potential. Under current economic conditions, India desperately need Foreign Direct Investment (FDI) for this the country must be clean.

SBM will benefit socially and financially each & every citizen of India. If we want financial growth then we have to collectively make SBM a roaring success in future. SBM is one of the critical links towards economic success of India.

Under SBM it is estimated that about 20% of the urban household in towns, who are currently practicing open defecation are likely to use community toilets as a solution due to land and space constraints in constructing individual household latrines. For this component beneficiaries shall be groups of household in urban area whose members practice open defecation and who do not have access of two household toilets and for whom the construction of individual household toilet is not feasible.

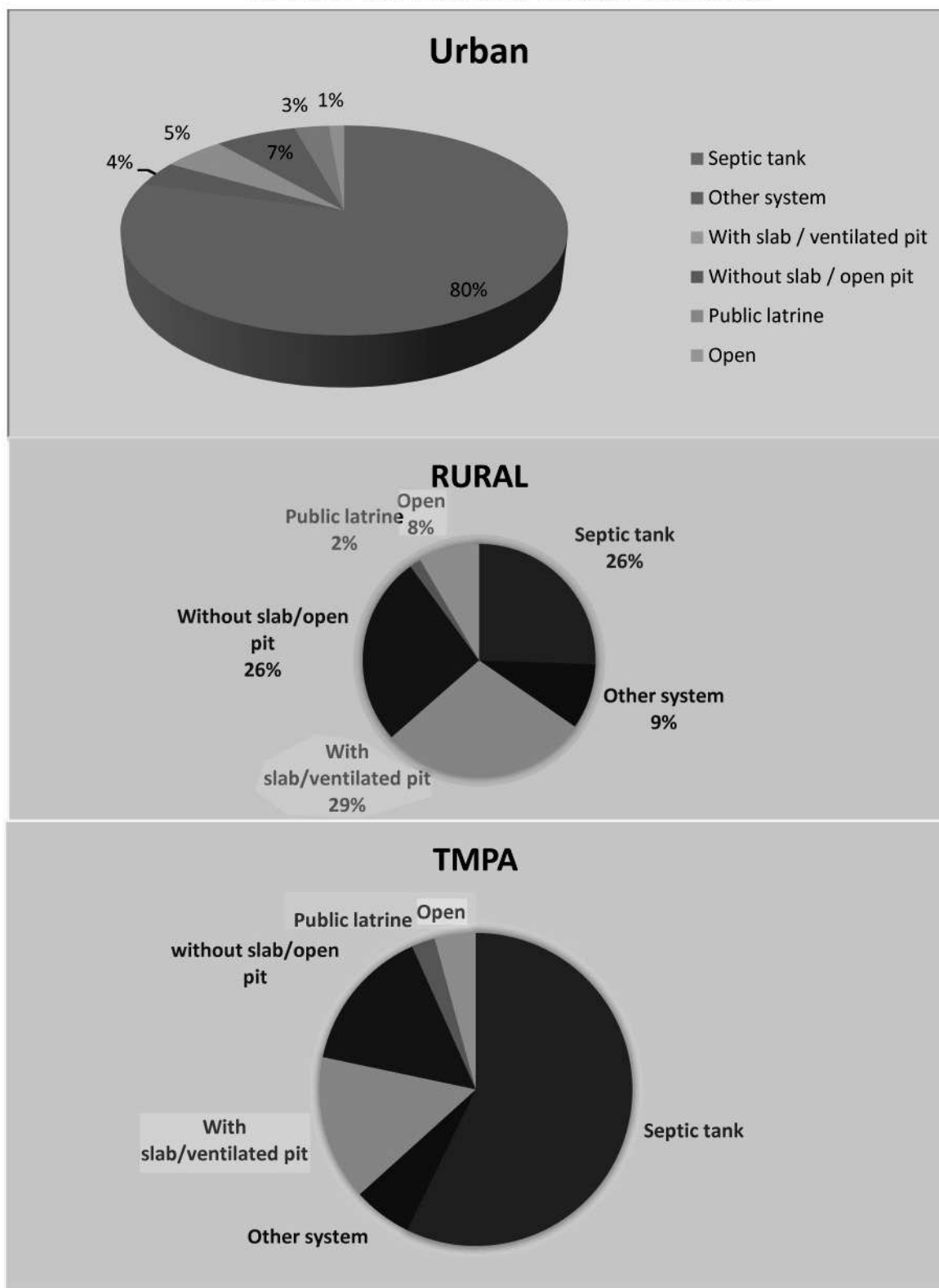
Under SBM, ULB's will ensure that a sufficient number of public toilet to be constructed in the town. All prominent places within the town attracting floating population should be covered. Cares should be taken to ensure that these facilities have adequate provision for man, woman and facilities for the disabled (e.g. ramp provision, Braille signage etc.) wherever necessary.

TABLE NO:- 39
Number and % of households by type of latrine
in 2011 for Tinsukia Master Plan area

Type of Latrine		Urban	%	Rural	%	Total	%
Flush / Pour latrine	Septic tank	20524	79.41	4617	25.53	25141	57.23
	Other system	1026	3.97	1646	9.10	2672	6.08
Pit Latrine	With slab / ventilated pit	1369	5.30	5226	28.90	6595	15.01
	Without slab / open pit	1812	7.01	4776	26.41	6588	15.00
No latrine without premise	Public latrine	773	2.99	291	1.61	1064	2.42
	Open	341	1.32	1528	8.45	1869	4.25
TOTAL		25845	100	18084	100	43929	100

Source: Census of India, 2011

FIGURE - 31
Number and % of households by type of latrine
in 2011 for Tinsukia Master Plan area



URDPFI guidelines for public toilets

The general standard for public toilets in public area and modified norms for public toilets in public places and roads recommended in URDPFI guideline are given below:-

TABLE NO-40
Norms For Public Toilets In Public Area

TYPE	NORMS FOR TOILETS
Public toilets	On road and for open areas every 1 Km. including parks, open air theatre, car parks and fuel station. Toilets shall be disabled friendly and in 50 : 50 ratio (M / F)
Signage	Signboards on main streets shall give directions and mention the distance to reach the nearest public convenience of visitors. Helpline number shall be pasted on all toilets for complaints / queries
Modes	Pay and Use or free in pay and use toilets entry is allowed on payment to the attendant.
Maintenance / Cleaning	The toilets have both men and women attendants. Alternatively automatic cleaning cycle covering flush, toilet bowl, seat, hand wash basin, disinfecting of floor and complete drying after each use can be adopted. Public toilets shall be open 24 hrs.

The urban local body can follow the above norms for construction the public toilet and maintenance thereafter.

6.1.4 Sewerage Network

Like the rest of the towns of the state, Tinsukia also does not have sewerage network and treatment plant. Human night soil is generally disposed at conventional septic tanks or low cost sanitary pits. Till the execution of the sewerage scheme, it is recommended to encourage the people to construct sanitary latrines of their own and to cover poor families under Swachh Bharat Mission. The use of service latrine should be banned as per law for the health and hygiene of the community.

6.1.5 Solid Waste Management

Solid Waste Management (SWM) is a process which involves collecting and disposing of solid wastes is unavoidable by products of human activities. Municipal Solid Waste (MSW) in India which includes garbage, metals, bottle or glass, plastics, paper and fabric have been increasing in recent years because of population increase, rapid urbanisation, technology and improper through-way culture of people. In general, the MSWM is the collection, treatment and disposal of solid waste generated by all categories of Municipal population in an environmentally, friendly and socially satisfactory manner using the available resources most efficiently. Urban bodies are generally responsible for providing the SWM services and nearly all local government laws give exclusive mandate of collecting all the wastes disposed outside homes or establishments. Effective solid waste collection and disposal is a vital component of public service provisions and should take priority particularly in emerging towns. Because, failing to have such services can result in many unfavourable outcomes in the long run and this may have serious adverse effect on public health and the environment.

The generation of solid waste has become an increasing environmental and public health problem in every urban area of India. The most urban areas of India rapid urbanisation and population growth has produced tremendous amounts of solid and liquid wastes that degrade the environment and destroy the resources. In the past, most policies and frameworks governing solid waste management in India have been directed at the service providers and less attention has been paid to the demand side aspect of the problem. As such, in present environmentally safe and ethical solid waste management system in Tinsukia town and its adjoining areas must be justified. Tinsukia town is growing very rapidly in recent years. Unplanned growth and development of the town in recent years and environmentally unsafe disposal of urban solid waste by residents of some parts of the town over the last two decades have been a major cause of the life threatens health hazards in the town. When talking about the major towns of upper Assam region, maximum quantity of waste is generated in Tinsukia town. Thus, under such circumstances it is very essential for environmentally safe and hygienic solid waste management system in the town in order to explore the possibility of community participation for a better Municipal Solid Waste Management System (MSWMS).

The present dumping site of Tinsukia town is located near LBT road, No.2 Potia Pathar at Tinsukia-Duliajan road about 4 Km from the heart of Tinsukia town. The area of the dumping site is 36 Bighas. Since the town generates a good amount of biodegradable solid waste besides plastic waste and malted wastes. So, this plan has suggested a scientific solid waste management and treatment plant at the present site of dumping for maintaining safety and hygiene. Further, a few steps for scientific solid waste

management system in master plan area includes segregation of bio-degradable and non-biodegradable solid waste at source, construction of compact pits at all residential houses in order to produce compost wherever feasible, introduction of specific litter bins for collection of segregated bio-biodegradable and non-biodegradable solid waste for soil conditioning and recycling purpose respectively, and doing away with the system of dust bins along roads which is a major cause of pollution.

Existing Solid Waste Management System of Tinsukia Municipality:

- I. Primary collection takes place from households door to door by compartmentalized vehicle.
- II. Secondary collection is from road side and bazaar areas by both manually and mechanised ways.
- III. Segregation takes place during collection at source and also at dumpsites.
- IV. Wet wastes are sent to the composting plant present near the dumpsite.
- V. Dry wastes are generally sent to MRF (Material Reuse Facility) for the reuse or recycling.

Few dustbins are available at some places but Municipal Authority is working to make the city bin free and demolition of the existing dustbin is under process.

Manpower and Machineries available for SWM related works:

a) Manpower	-	120 Nos.
b) Excavators	-	2 Nos.
c) Mini Excavator	-	3 Nos.
d) Poke-land	-	1 Nos.
e) Truck (Dumper)	-	2 Nos.
f) Mini Dumper	-	3 Nos.
g) Tractor	-	3 Nos.
h) Small vehicles	-	25 Nos.
i) Organic Waste Converters	-	3 Nos.

The duties and responsibilities of ULB's as per revised Solid Waste Management rules of 2016 are given below:

- (i) The ULB's shall prepare a Solid Waste Management plan as per state policy within six (6) months.
- (ii) Arrange for door to door collection of segregated solid waste; integrate rag pickers/informal waste collectors in solid waste management.
- (iii) Frame bye-laws incorporating the provisions of these rules within one year, prescribed user fee.

- (iv) Direct waste generators not to litter and to segregate the waste at source and handover does aggregated waste to authorized waste pickers, the waste collector authorized by the ULB.
- (v) Set up material recovery facilities or secondary storage facilities and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste.
- (vi) Established waste deposition centre for domestic hazardous waste and ensure safe storage and transportation of the domestic hazardous waste to the hazardous waste disposal facility or as may be directed by the state pollution control board.
- (vii) Direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and hand over to the waste collectors or agency authorized by ULB.
- (viii) Provide training on solid waste management to waste pickers and waste collectors.
- (ix) Promote setting up of decentralized compost plant or bio – meth nation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions.
- (x) Collect separately waste from sweeping of streets, lanes and by-lanes daily or on alternate days or twice a week depending on the density of population, commercial activity and local situation.
- (xi) Involve communities in waste management and promotion of home composting, bio – gas generation, decentralized processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facilities.
- (xii) Educate workers including contract workers and supervisors for door to door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facility.
- (xiii) Ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand gloves, rain coats, appropriate foot wear and masks to all workers handling solid waste and the same are used by the work force.
- (xiv) Create public awareness on solid waste management.

6.1.6 Electric Sub- Station and Major Transformers

Power requirement of Tinsukia master plan area is meeting by the ASEB grid. There are 22736 electric connections i.e. almost 87.97 % in urban area and 10720 electric connections i.e. almost 59.28% in rural area. In the master plan area as a whole there 33456 electric connections i.e. almost 76.16%. Since the consumptions is increasing at a fast rate due to increase in population as well as modernization of home appliances and on the other hand APDCL fails to cater the needs of the people causing load shedding in peak hours.



Transformers creating urban issues

6.2 Social Infrastructure

6.2.1 Education facilities

The progress and development of a place is closely related to expansion, development and modernization of education facilities. The educational atmosphere in Tinsukia is good in comparison to nearby towns. For school level education, high quality educational institution like Tinsukia College, Tinsukia Women's College, Tinsukia Law College, Tinsukia Commerce College, , Auxilium Junior College, Kendriya Vidyalaya, Stephen School, Guru Teg Bahadur Academy, Vivekananda Kendra Vidyalaya, Holy Brook School, Budding Buds Sr. Sec School, Holy Child School, Senairam HS School, etc. provides educational facilities not only to the students of Tinsukia but also the students to its adjoining areas as well as nearby towns. Beside these school, there are so many L.P and High Schools, and many other private play house school providing school education in Tinsukia.

TABLE NO-41
List of LP Schools in Tinsukia master plan area

1. Adarsha Bharatiya Hindi LP	15. Steelsworth LP	29. Hindi Girls Primary School	42. Dimoruguri Primary School
2. Bidyaniketan Hindi LP	16. Bimalaprasad Chaliha LP	30. Sarvajanik Hindi Primary School	43. Kadamani LP
3. Sripuria LP	17. Durgabari Shishu LP	31. Tinsukia Rly Prathamik Vidyalaya	44. Kukurekhowa Primary School
4. Banisadan LP	18. Tinsukia Bengali Girls LP	32. Batarpukhuri Prathamik Vidyalaya	45. Chandmari Adarsha LPS
5. Banikanta LP	19. Hindustani Primary School	33. Nabachetana Adarsha Vidyapith	46. Chandmari Banua LPS
6. Ramkrishna Shishu LP	20. Dr. B R Ambedkar LP	34. Keheng Adarsha TE LP	47. Sarbajanin Kakratoli LPS
7. Sree Durga LP	21. Monideep LP	35. Loonpuria LPS	48. Sankardev Prathamik Bidyalaya
8. Ganapatrai Basic LP	22. Bangiya Shishu Prathamik Bidyalaya	36. Durgamandir Hindi LP	49. Kachujan TE LP
9. Gobardhan Das Goenka LP	23. Adarsha Prathamik Vidyalaya	37. Kaptanchuk LP	50. Chandmari Nepali LP
10. Dohutiachuk LP	24. Hindi Primary School	38. Loonpuria Balika LP	51. Gelapukhuri gaon LP
11. Borguri LPS	25. Chandmari TE LP	39. Hijuguri Railway Colony LP	52. Hijuguri Assamesee LP
12. Ahukhat LPS	26. Bojaltoli LPS	40. Nokhroy Sramik LPS	53. Okanimoria Bongali gaon LP
13. Bordoloinagar LPS	27. Nokhroi TE LP	41. NF Rly Primary School	54. Dehingia LP
14. Chikajan LPS	28. Lejaihula Janamukh LP		

TABLE NO-42
List of ME Schools in Tinsukia master plan area

1. Hindustani MES	8. Tinsukia Middle MES
2. Bangiya Shishu ME	9. Laipuli MES
3. Bipin Bora MES	10. Bordoloinagar MES
4. Sarbananda Singha MES	11. Bojaltoli Hindi Madhamik
5. Shree Durga MES	12. Hijuguri Railway Colony MES
6. Ganapatrai Rasiwasia MES	13. Hijuguri Assamese MES
7. Ramkrishna Shishu Vidyalaya MES	

TABLE No-43
List of High School & Higher Secondary Schools in Tinsukia master plan area

1. Tinsukia Sanskrit Vidyalaya	2. Hindi English HS	3. Budding Buds Senior Secondary	4. Tinsukia Jatiya Vidyalaya
5. Sarbajanin HS Balika Vidyalaya	6. Tinsukia English Academy	7. Tinsukia Bangiya Vidyalaya HSS	8. St. Stephens High School
9. Tinsukia Rly HS	10. Bipin Bora HS	11. Buds Girls HS	12. Bordoloi nagar High School
13. Holy Brook School	14. Sarbananda Singha HS	15. Bangiya Shishu Vidyalay Girls HS	16. Bengmora Jatiya Vidyalaya
17. Kendriya Vidyalaya	18. Bon Bosco School	19. Senairam HSS	20. Hijuguri Railway High School
21. Tinsukia Uchha madyamik Vidyalaya	22. Ganapath Rai Rasiwasia HS	23. Sarbajanik Hindi Balika Vidyalaya	24. Borguri High School
25. Jatiya Bidyalaya Sripuria	26. Holychild School	27. Adarsha Balika Vidyalaya	28. Hijuguri Assamese High School
29. Bhagawat Vidyamandir HS	30. Durgabari Shishu HS	31. Guru Teg Bahadur Academy	32. Indira Gandhi HS
33. Pinewood Residential HSS	34. Hindustani Bidyalaya HS	35. Vivekananda Kendra Vidyalaya	
36. Hindi Girls HS	37. Tinsukia Bengali Girls HS	38. Hindustani Kendra Vidyalaya	

TABLE No-44
List of Colleges in Tinsukia master plan area

1. Tinsukia Polytechnic	2. Tinsukia Law College
3. Womens College	4. Janata MahaVidyalaya
5. Tinsukia Commerce College	6. Auxilium Junior College
7. Tinsukia College	8. Tinsukia Medical College

Tinsukia College established in 1956 is affiliated to Dibrugarh University and has been accredited by NAAC with a 'B+' grade. It is a premier educational institute with over 2500 students and more than 80 faculty members. It also has a vibrant study centre of Krishna Kanta Handique State Open University offering Three Years Degree Courses



Tinsukia College

The Women's College, Tinsukia came into being in 1966 on the auspicious day 9 July. The College is located at Durgabari in the heart of Tinsukia. A full-fledged study centre of the IGNOU and one Distance Education centre of the Dibrugarh University housed in the institution offer various courses at distance mode to aspiring students.



Tinsukia Women's College

Tinsukia Commerce College was established in the year 1972. it is affiliated to the Dibrugarh University and is accredited with grade “B” by NAAC (National Assessment and Accreditation Council). The college is also equipped with the study centre for KKHSOU (Krishna Kanta Handique State Open University) and IGNOU (*Indira Gandhi National Open University*).



Tinsukia Commerce College

Janata Mahavidyalaya, is a major and general degree college situated in Tinsukia, Assam. This college is affiliated with the Dibrugarh University.



Janata Mahavidyalaya

Tinsukia Polytechnic is one of the 5 new polytechnics starting their session from October 2020 (Academic Year 2020-21). Tinsukia Polytechnic is situated near Tinsukia Medical College & Hospital at Hukanpukhuri Tea Estate 37/73 Nlr Grant . Tinsukia Polytechnic is the Easternmost Polytechnic in Assam. Tinsukia Polytechnic offers Three Years Diploma Course in 3 disciplines of Engineering namely Civil Engineering, Mechanical Engineering and Mining Engineering. In fact, this is only polytechnic in Assam offering 3 years Diploma Engineering Course in Mining Engineering.



Tinsukia Polytechnic

Auxilium Junior College, is an educational institution established and administered by the Daughters of Mary Help of Christians (FMA), popularly known as Salesian Sisters of Don Bosco. The aim of the Junior College is to introduce young women to higher education and promote their holistic development. This college is situated in Bordoloi Nagar, Tinsukia.



Auxilium Junior College



Kendriya Vidyalaya



Stephen School



Guru Teg Bahadur Academy



Vivekananda Kendra Vidyalaya



Holy Brook School



Holy Child School, Tinsukia

Budding Buds Sr. Sec School is located D. M. Lohia Road, S. K. P. T. Complex, Tinsukia and in the heart of Tinsukia town and is at a distance of about 150 metres from the old Railway station. Established by the Shree Kanya Pathshala Trust in 1st March 1984, Budding Buds Sr. Sec. School is an English Medium School having classes from Play House to XII.



Budding Buds Senior Secondary School



Tinsukia Bengali Girls High School



Senairam HS School



Hindustani Kendriya Vidyalaya



PineWood Residential School



St. Stephen's High School



Tinsukia English Academy

URDPFI guideline for education facilities**TABLE NO-45****Norms For Pre-Primary Nursery School To Higher Education**

Sl. No	Category	Student Strength	Population served per unit	Area Requirement	Other Controls
1	Pre- Primary Nursery School	-	2500	0.08 Ha	To be located near park
2	Primary School (Class I to V)	500	5000	Area per School = 0.40 Hec. A) School building area = 0.20 Hec. B) Play field area = 0.20 Hec.	Play field area with a minimum of 18 m X 36 m to be ensured on effective play.
3	Senior Secondary School (VI to XII)	1000	7500	Area per School = 1.80 Hec. A) School building area = 0.60 Hec. B) Play field area = 1.00 Hec. C) Parking area = 0.20 Hec.	Play field area with a minimum of 68 m X 126 m to be ensured on effective play.
4	Integrated School without hostel facility (Class I to XII)	1500	90000 To 1 Lakh	Area per School = 3.50 Hec. A) School building area = 0.70 Hec. B) Play field area = 2.50 Hec. C) Parking area = 0.30 Hec.	To be located near a sport facility
5	Integrated School with hostel facility (Class I to XII)	1500	90000 to 1 Lakh	Area per School = 3.90 Hec. A) School building area = 0.70 Hec. B) Play field area = 2.50 Hec. C) Parking area = 0.30 Hec. D) Residential area = 0.40 Hec.	To be located near a sport facility
6	School for Physically Challenged	400	45000	Area per School = 0.70 Hec. A) School building area = 0.20 Hec. B) Play field area = 0.30 Hec. C) Parking area = 0.20 Hec.	To be located near park or sport facilities
7	College	1000 To 1500	1.25 Lakhs	Area per School = 5.00 Hec. A) School building area = 1.80 Hec. B) Play field area = 2.50 Hec. C) Parking area = 0.30 Hec. D) Residential area = 0.30 Hec.	

So, this plan suggest to take measures by the education department as well as private institution to increase the area of primary school up to 0.40 Hectare including playfield area, for Higher & Higher Secondary School up to 1.80 Hectare including playfield and parking area and for the intermediate school up to 3.50 hectare including playfield, parking facility and hostel facility as per URDPFI guideline.

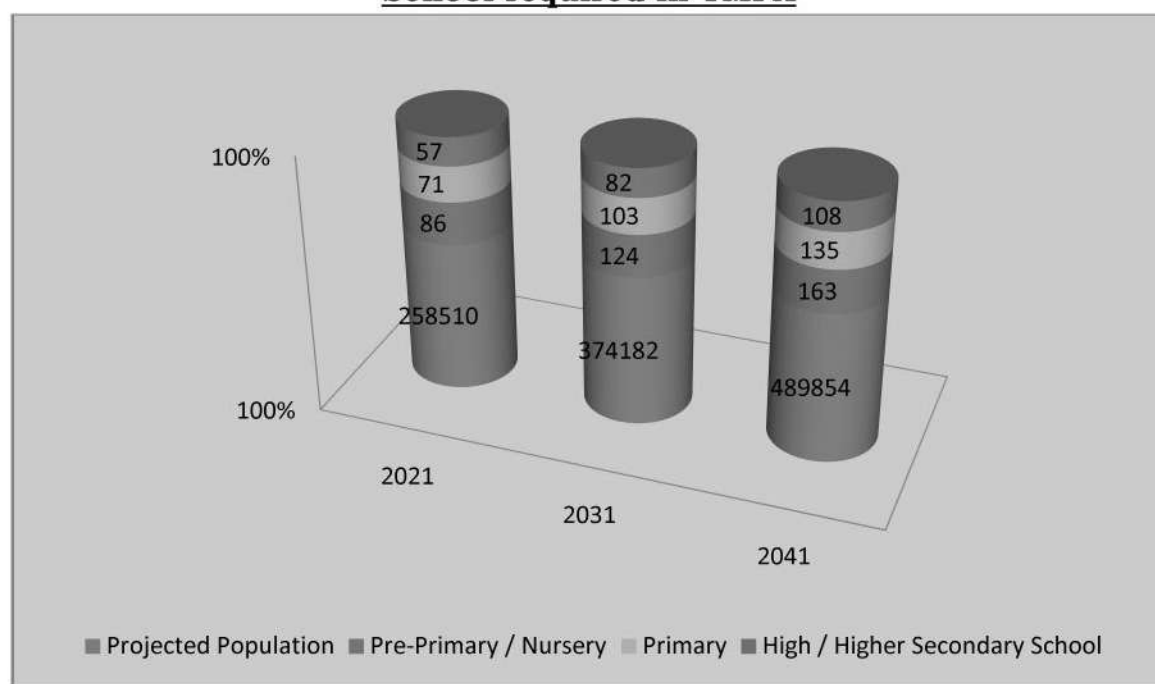
This plan also suggest for the provision for school for physically challenged child / person's in an area of about 0.70 hectare for the enrolment capacity of 400 with adequate playfield and parking facility by the education department or by any NGO associated with social up liftmen of the region.

The requirement of school in TMPA up to 2041 for projected population is given in the following table-

TABLE NO-46
School required in TMPA

YEAR	PROJECTED POPULATION	Pre-primary /Nursery Student strength-	Requirement of Pre-primary /Nursery Schools (120 students per school)	Primary Student strength -	Requirement of Primary Schools (400 students per school)	High/Higher Secondary School/College Student strength-	Requirement of High/Higher Secondary School/College (1000 students per school)
2021	258510	10340	86	28436	71	56872	57
2031	374182	14967	124	41160	103	82320	82
2041	489854	19594	163	53883	135	107768	108

FIGURE :-32
School required in TMPA



Source: Estimated by Town & Country Planning, Assam, Dibrugarh

The shortage of schools in the plan area, to some extent has been fulfilled by the private institutions at present and it is also hope that in the

future, private institutions will play an important role to mitigate the shortage of primary schools as well as High and Higher Secondary schools.

6.2.2 Health Care facilities

Hospitals and healthcare services in the city of Tinsukia is quite advanced and more importantly it is available with improved facilities and advanced technologies. Located across the town are a number of hospitals and private nursing homes that attend to the needs of the society. Most of the hospitals have all the advanced treatment facilities needed to support the people of the city. Serious category patients generally rush to Assam Medical College, Dibrugarh situated at a distance of 48 Km from Tinsukia for better treatment.

To boost the medical and healthcare service in the state, the Government of Assam decided to construct one Medical College and Hospital at Hukanpukhuri Tea Estate 37/73 Nlr Grant and Luhari Bongali Gaon of Tinsukia district (as per ASDMA map). A project for Construction of the Tinsukia Medical College and Hospital along with related infrastructure is approved for funding from Assam Infrastructure Financing Authority with an estimated project cost of Rs. 350 Crores. The project has been approved in June 2018 and is expected to be completed within three years. The proposed Medical College cum Hospital will be constructed on a plot of land measuring 38.50 acres.



Tinsukia Medical College and Hospital (under construction)

The main components of the project are:

1. Hospital building - 1 block
2. Medical College building – 1 block
3. Auditorium – 1 block
4. Residential Quarters - 15 blocks, 194 quarters
5. Hostels for boys, girls, nurses and resident doctors, total 4 blocks to accommodate 402 Nos. of students, 150 Nos. of nurses and 60 Nos. of resident doctors.
6. Animal House- 1 No.
7. ESS block - 1 No. etc.

Lokapriya Gopinath Bordoloi Civil Hospital is located at Bordoloi Nagar and well connected by all weather roads from every part of the master plan area. It has 300 beds capacity and providing health care to all sections of the people. Recently Govt. has inaugurated a multi-storied mother and baby care unit. The hospital has all the facilities like dialysis centre, laboratory, x-ray, city-scan, ultra-sonography, etc.



Civil Hospital, Tinsukia



ESI Hospital, Tinsukia



N.F. Rly Hospital, Tinsukia

List of Health Care Centres at Tinsukia master plan area:

1. Bordoloi Nagar
2. Dhekiajuri
3. Hebeda
4. Chototingrai
5. Hatigarh
6. Hukanpukhuri
7. Joriguri
8. Kukurekhowa
9. Laipuli
10. Lezaihula
11. Okonimuria
12. Tingraihabi
13. Bhimpara

TABLE NO-47
List of Nursing Homes in Tinsukia

Sl. No.	Name of Nursing Home	Ward No. & Village
1	Dey's Nursing Home	15
2	R. C. Agarwal Nursing Home	5
3	City Nursing Home	12
4	Lifeline Hospital	6
5	PineWood Nursing Home	7
6	Borthakur Nursing Home	7
7	Jiban Jyoti Nursing Home	7
8	Bawari Nursing Home	7
9	Biroja Nursing Home	7
10	M R Orthopedic Clinic & Hospital	15
11	Swastik Nursing Home	4
12	St. Luke's Hospital	Patia Pathar No. 1



Borthakur Nursing Home



Life Line Hospital



Jeevan Jyoti Nursing Home



Pinewood Hospital

URDPFI guideline for health care facilities

In the health care facilities the size of a hospital depends upon the hospital bed requirement, which in turns is a function of the size of the population it serves. As per URDPFI guideline the calculation of number of beds is based on:-

A) Annual rate of admission as 1 per 50 population

B) Average length of stay in a hospital as 5 days.

Since the projected population for Tinsukia master plan up to the year 2041 is 489854, as such, the number of beds required for the said population is :-

- i) No. of beds days per year = $(489854 \times 1/50) \times 5 = 48985$
 ii) No. of beds required with = $48985 / 365 = 134$
 100% Occupancy

The classification of healthcare facilities as URDPFI guideline is given in the following table:-

TABLE NO-48
Healthcare Facilities

Sl.No	Category	No. of Beds	Population served per unit	Area Requirement
1	Dispensary	-	15000	0.08 to 0.12 Ha
2	Nursing home, Child Welfare & Maternity Centre	25 to 30 beds	45000 to 1.00 Lakhs	0.20 to 0.30 Ha
3	Polyclinic	Some observation bed	1.00 Lakhs	0.20 to 0.30 Ha
4	Intermediate Hospital	200 Initially the provision may be for 100 beds including maternity beds	1.00 Lakhs	Total Area = 3.7 Ha. i) Area for hospital = 2.70 Ha. ii) Area for Residential Accommodation = 1.00
5	Family Welfare Centre	As per requirement	50,000	Total Area = 500 Sq.m to 800 Sq.m
6	Diagnostic Centre	As per requirement	50,000	Total Area = 500 Sq.m to 800 Sq.m
7	Rehabilitation Centre	-	-	As per requirement

This plan suggest to take appropriate measures by the health department for the provision of 7 nos. of dispensaries at various location within the master plan area covering an area of 0.08 – 0.12 hectare per

dispensary serving at least 15,000 persons. This plan also suggest to set-up a family welfare centre to serve at least 50000 person's by the health department and also a Re-habilitation centre by the Govt. or by any NGO for the up liftmen of deprived class of the community.

6.2.3 Parks and Recreation Spaces

Parks, playground and recreational space plays an important role in providing a healthy and balanced urban living environment. It provides space for physical and mental health development and social harmony. The Tinsukia master plan has Marut Nandan Kanan (Na-pukhuri), Tinkunia park, Puja mandir park, *Bishnu Rabha park*, Piyoli Phukan park, Gandhi park and TDA lake for recreational activities.



Marut Nandan Kanan (Na-pukhuri)

There are 2 (two) indoor stadiums viz. Kachujan Stadium at Kachujan field and TDA Indoor Stadium at Napukhuri giving ample oppurtunities for development of indoor sports. Culturally vibrantTinsukia have also a numbers of community halls and social-cultural institutions. In addition to the above, the Sarbananda Singha stadium situated by the side of Juria-Namghar poth, Kachujan stadium situated near Tinsukia college adjacent to Gelapukhuri road and a major field known as Janormukhor field situated at Lejaihola gaon are taking care of sports activities of Tinsukia urban agglomeration. The youth of this region is advanced in sports due to their inborn physical qualities.

In Tinsukia master plan area the existing land use for recreational purposes is 213.37 hectares i.e. 5.15% of the total developed area. In the proposed Land use plan for recreation purposes increase to 649.59 hectare i.e. 8.99% of the total developed area keeping in mind the increase of population up to the year 2041. The land utilization rate for recreation purposes will be 0.75 hectare per 1(one) thousand population in the master plan area.



Sarbananda Singha Stadium



Kachujan Field



Indoor Stadium

CHAPTER - 7

7. ENVIRONMENT, TOURISAM AND CITY BEAUTIFICATION PLAN

7.1 Description of eco-friendly / Heritage areas –

There are many eco-friendly/heritage sites in Tinsukia which became the pride of Tinsukia.

This Indian Railway Heritage Park cum museum has become one of the attractions for the people as it provides information about the rich heritage and history of India as well as North-East Frontier Railway. This museum has been designed to preserve and exhibits a diverse collection of railways. This museum acts a vital source of information and helps to educate people particularly children about the rich heritage of Indian History of Railway as well as North-East Frontier railway. It comprises of centuries old trains ranging from Britain built original turn table manufactured in 1892, railway wheels used by the US Army during the 2nd World War. Besides being historically rich, the heritage park consists of a toy-train which offers joy rides to visitors and a mini railway station which is set-up to show case people the rich legacy of North-East Frontier Railways.



Indian Railway Heritage Park cum museum (Tinsukia)

Napukhuri & Marut Nandan Kanansituated at Tinsukia-Duliajan Rd (LBT) Tinsukia is the biggest attraction of the town. This is a group of 9 (nine) ponds on the periphery of the town. This historical pond was dug in the period of King Sarbananda Singha.



Na-pukhuri



Beng Pukhuri



Tinikunia Pukhuri

Dibru Saikhowa National Park is located just 13 Km from the heart of Tinsukia town. The river Brahmaputra is surrounding the national park. Various animals including aquatic animals, *white-winged wood ducks*, *water-buffalos*, *wild horses*, *tigers* and *capped langurs* are found in the park.



Dibru-Saikhowa National Park

Maguri Beel also known as Maguri Motapung Beel is approx. 9 km away from Tinsukia town. Maguri Motapung Beel (also known as Maguri Motapung Bill, Maguri Bill and Maguri Beel) is a wetland and lake located near to Dibru-Saikhowa National Park and Motapung village of Tinsukia district in Assam. Maguri Motapung Beel serve as natural home to wildlife and provide a source of livelihood to the local communities. Maguri is the local term for walking catfish and Motapung is the name of the nearby village.



Maguri Beel

Bell Temple (Tilinga Mandir) is 14 Km away from Tinsukia town. The Bell temple is a major attraction for the devotees and tourists. It is dedicated to lord Shiva. It is also known as Tilinga Mandir where a huge Banyan tree once stood in the complex is tied all over with pretty bells by devotees.



Bell Temple (Tilinga Mandir)

Borjan Bherjan Wildlife Sanctuary is 5 km from the heart of Tinsukia town. It is a popular tourist attraction. Various species of animals including species like *hoolock gibbon*, *stump tailed macaque*, *capped langur*, *common macaque* and *slow loris* can be found here.



Borjan Bherjan Wildlife Sanctuary

7.2 Plan/Measures for protection and conservation of environmentally- friendly zones.

Being environmental friendly simply means having a lifestyle that is better for the environment. It's all about taking small steps towards mother earth so as to make this planet a better place for our communities and generations to come. A good way would be to start with conserving water, driving less, walking more, consuming less energy, buying recycled products, eating locally grown vegetables, joining environmental groups to combat air pollution, producing less waste, planting more trees and many more. The more that we do on our part the faster we will create an environment of living that promotes sustainability. People of the town who are committed to conservation and preservation of resources should encourage options like community play grounds, public transportation, green construction and work to change the way that fossil fuels and other resources are used to support community services.

This plan suggest following proposals for protection and conservation of environmental friendly zones-

- (i) People of Tinsukia urban area should join hand with environmental groups to protect the town and make the environment clean and green.
- (ii) Reduce, reuse, recycle waste hierarchy is the order of priority of actions to be taken to reduce the amount of waste generated and to improve overall waste management processes and programs.
- (iii) Plantation habit should be grown up among the people. For this necessary awareness camp should be organized by competent authority for conservation of natural resources and composting system.
- (iv) Steps should be taken by the authority to stop people from littering on roads. Instead, educate them to put trash and garbage in dustbins. The pile of garbage on road hampers the beauty of the city and also pollutes the air.
- (v) Steps should be taken by the concerned authority to reduce the emitted hazardous chemical and gases in industrial activities.



Plantation habit



Reduce, reuse, recycle waste

7.3 City Beautification Plan/ Proposals-

To improve town's appearance and aesthetic view, neighbour hoods often try to update what is known as streetscape, which pertains to the area between the driving lanes and the edge of the private property. Partly this is a popular strategy because it is public space and it's easy for the government to dictate what will happen there. In truth, streetscape can be quite effective in uniting block faces or a series of blocks that are discordant in some way, because streetscape often includes plantings, the effect is to soften the view created by streets and hopefully sidewalks. Care in the choice of materials and in the quality of the installation makes all the difference in this form of beautification.

In addition to streetscape, sometimes we need a focal point. This might be public art and open air theatre, fountains, a clock tower or grouping of tall grasses. If we already have a lonely statue or old historical building with nothing around it, maybe we should add planting beds of considerable size, an inviting bench or two, and may be an interpretive sign explaining the rest of the story. A tree planting project, either on a vacant plot, in a park, or in the parkway between the side walk and the street is great for improving Towns appearance over the course of a few years at a relatively low cost. Voluntary schemes should be taken up by neighbourhood basis for cleaning up the park of the town.



City beautification

7.4 Roadside Plantation-

The main object of road side plantation is to provide protection to road, traffic, check soil erosion, food, fuel, fodder and timber to the society and mitigate climate change issues. Plantation is durable assets that produce

fruits and raw-materials for agro based industry, and also generate livelihood after 7 to 10 years.

This plan suggest the social forestry department to prepare project on road side plantation with details of road to be covered , length of road and species of plants to be planned with numbers of plants for entire Tinsukia master plan area.

Plantation of fruit bearing plants, suitable to local agro-climatic condition should be done in every area of the master plan. The authority concern should take steps for organizing camp and awareness program for road side plantation and educate the people about the benefits of road side plantation including its impact on city's landscape.



Roadside plantation

7.5 Urban Agriculture and Urban forestry.

Urban agriculture is the new culture that is catching up in emerging cities. Since the population growth rate is very high, natural resource to feed the increasing population in coming days is a challenging task ahead. So, urban agriculture has been seen as big solution to the problem.

Urban forestry is the careful care and management of tree in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. Urban forest function is thus often oriented toward human outcomes, Such as shade, beauty and privacy. Urban forests bring many environmental and economic benefits to town. Among these are energy benefits in the form of reduced air conditioning, reduced heating by shading buildings, homes and roads, absorbing sunlight, reducing ultraviolet light, cooling the air and reducing wind speed.

So, urban forestry scheme should be taken by competent authority for afforesting degraded forest land in the Tinsukia Master plan Area. This type of scheme will act against climate change by creating a carbon sink and against air population in the town. This plan also suggests for starting tree surveys in the town which can be conducted by NGO and college or school students. A

plan should be framed to create small nurseries in Govt. school as well as in private institution where there is extra space.



Urban agriculture



Urban forestry

7.6 Public Rain Water Harvesting Scheme

Rainwater harvesting is a process involving collection and storage of rain water that runs off natural or man-made catchment areas, e.g. roof top, Compounds, rock surface or hill slopes or artificial repaired impervious/semi-pervious land surface.

Due to deforestation and the consequent ecological imbalance, the ground water level is going down day by day. The constant rising demand of water supply especially from the urban areas does not match with the surface water sources, as a result of which the water reserves beneath the ground level are over exploited. This consequently results in the water level depletion.

Water harvesting apart from recharging the ground water level, increases the availability of water at a given place at a given point of time. It also reduces the power consumption. It further reduces the run off which chokes the storm water drains artificial flooding, chances of soil erosion and improves the quality of water. The plan suggest rain water harvesting scheme to be implement by a competent authority. Moreover, the urbanization trend reduces the infiltration rate of rain water into the sub-soil there by reduces ground water recharging.



Rainwater harvesting